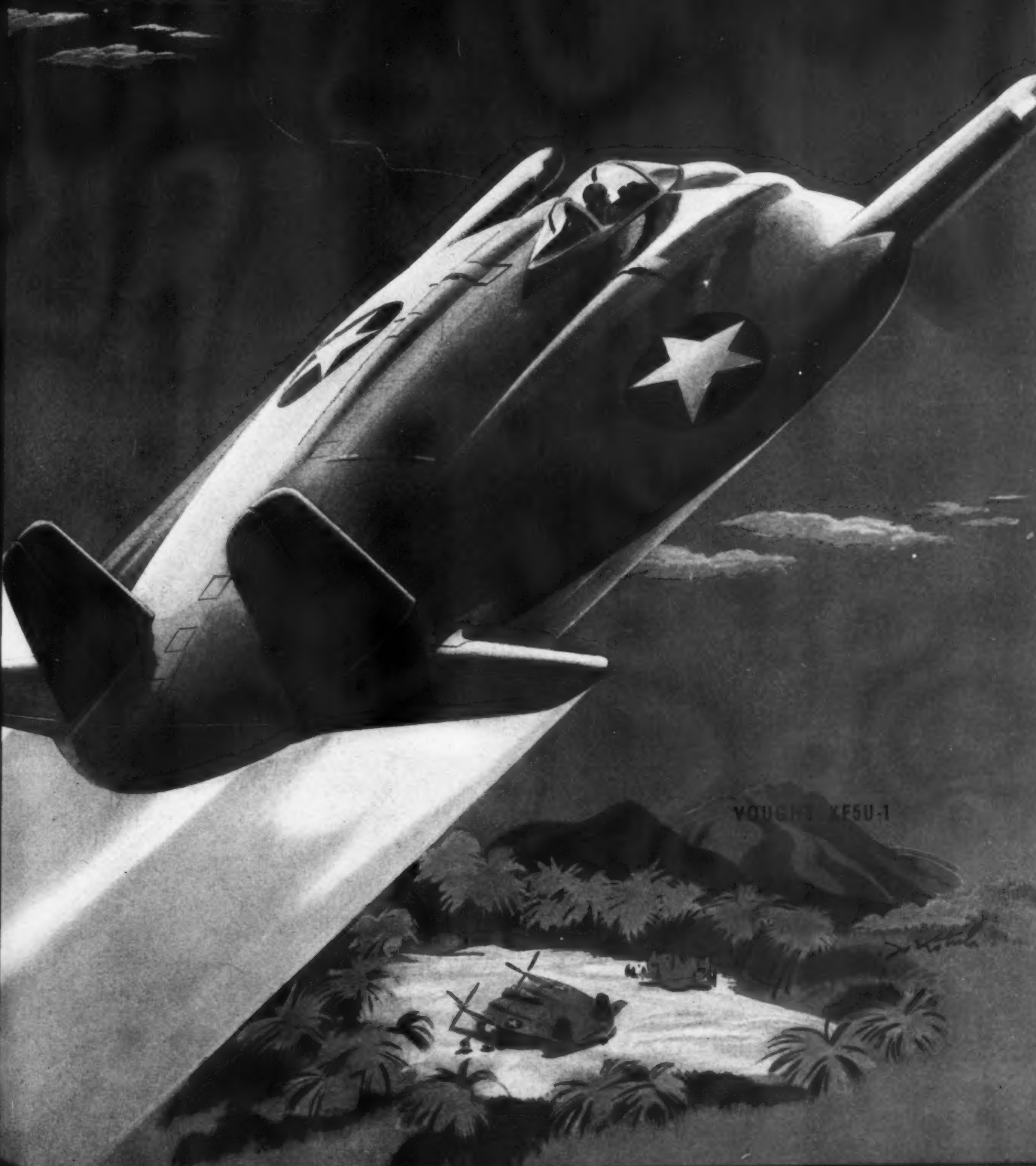
MODEL AIRPLANE NEWS

JANUARY 1947 · 20 CENTS
An AIR AGE Publication



VOUGHT XF5U-1


NOW AVAILABLE IN
3 SIZES
for your convenience!
TESTORS MODEL AIRPLANE CEMENT
Strong!
Quick Drying
5¢
10¢
25¢
ONLY TESTORS GIVES
YOU THIS NEW SUPER
Fast-Drying Formula
WITH HEAVIER CONSISTENCY
TESTOR CHEMICAL COMPANY • ROCKFORD, ILLINOIS, U. S. A.

STAR of the NATIONALS
at Wichita, Sept. 1946
DELONG "30"
Class B Winner
DELONG 30
FIRST FREE FLIGHT SENIOR CLASS
FIRST CONTROL LINE SENIOR CLASS
FIRST FREE FLIGHT OPEN CLASS
FIRST CONTROL LINE OPEN CLASS
$19.50
NEW LOW PRICE
Formerly $24.50
SUPER MOTORS, INC. • 2093 E. 19th ST. • CLEVELAND 15, OHIO

Serving Aviation 18 Years

MODEL AIRPLANE NEWS

JAY P. CLEVELAND
Publisher

JANUARY 1947 VOL. XXXVI No.1

CONTENTS

Cover Design by Jo Kotula

FREE FLIGHT GAS
Rambler.......................17

CONTROL LINE GAS
Ansaldo SVA 5.......................39

FLYING SCALE RUBBER
Model Globe Swift.......................23

SIMPLE RUBBER MODEL
Oil-E-Bird.......................34

WYLAM MASTERPLANS
Siemens Schuckert D-4.......................30

PLANE ON THE COVER
Vought XF5U-1.......................29

SCIENCE
Design Forum.......................22
Four Blade Props and Spinners.......37
Adjustment for Austin Timer.......42

WORLD WAR I
Siemens Schuckert Fighters.........27

3 VIEWS
Vought XF5U-1.......................28
ME 262.......................40

NEWS
Flash.......................2
Model Airplane Newsletter.........6
West Coast Tips.......................10
Air Ways.......................32
Club News.......................67

AN AIR AGE PUBLICATION

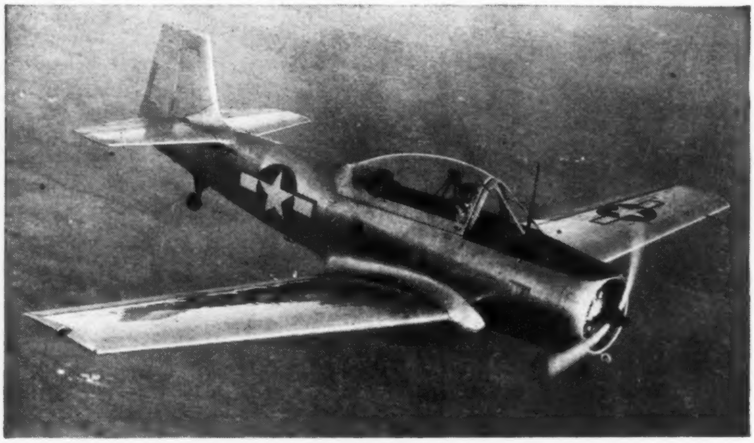
HOWARD G. McENTEE.................Editor
JOSEPH M. MANN.............Managing Editor
WILLIAM A. WYLAM...........Associate Editor
WITTICH HOLLOWAY.............Art Director
JAY P. CLEVELAND........Advertising Manager
A. M. HOFFMAN...........Asst. Adv. Manager
ELY O. MERCHANT........Adv. Field Manager

Published monthly by Air Age, Inc., Mount Morris, Illinois. Editorial and Advertising offices: 551 Fifth Ave., New York 17, N.Y. Jay P. Cleveland, President and Treasurer; A. M. Hoffman, Sec'y. Entered as second class matter Dec. 5, 1934 at the post office at Mount Morris, Ill. under the act of March 3, 1879. Additional entry at New York, N.Y. Price 20c per copy. Subscriptions $2 per year in the United States and possessions; also Canada, Cuba, Mexico, Panama and South America. All other countries $2.50.

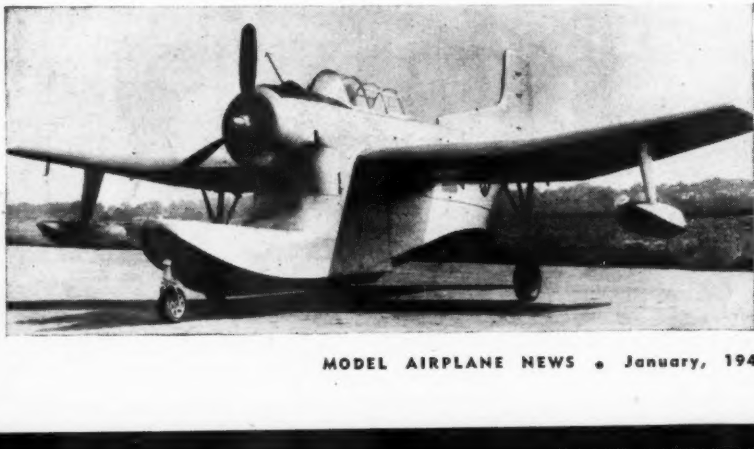
ARMY AIR FORCES have won their fight for control of guided missiles research and development within the War Department. The Army Ordnance Department, which has had cognizance over all Army weapons for more than 100 years, has relinquished control over guided missiles while remaining in the picture for such work as it may be assigned by AAF. Thus ends the first step in clearing up the unbelievably muddled guided missile development picture.

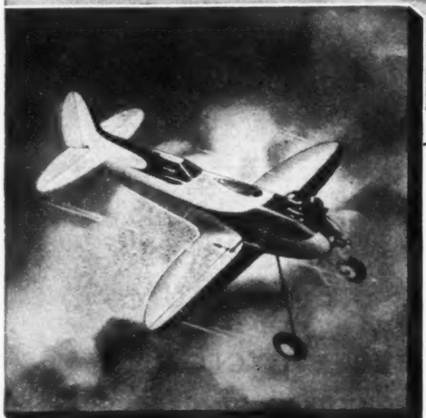
NAVY DEPARTMENT, timing things carefully with release of the above news, revealed details on the BAT, a radar-homing glide bomb used during the closing stages of the war in the Pacific. The BAT is a 1600 lb. glider with 10 ft. wings supporting a standard 1000 lb. general purpose bomb. Its nose contains radar equipment that makes automatic corrections to gyro units, which in turn operate servo units moving the controls and guiding the craft directly into the target. Demonstration of the BAT took place at Chincoteaque, Va., a heretofore secret experimental base. Two BAT's were suspended beneath the wing of a Consolidated Vultee PB2Y-2 *Privateer* and flown 125 miles to sea to the target, a surplus merchant ship. The giant craft was accompanied by a Grumman F6F-5 *Hellcat* (fighter protection), Curtiss SB2C-5 *Helldiver* (scouting), a Douglas R4D-6 (press observers) and a Consolidated Vultee PBY-6A *Catalina* (Naval observers). Only one BAT was launched and a hit direct on the waterline of the transport was scored through an overcast. Occasion of the demonstration was official transfer of the BAT from Bureau of Ordnance, which developed and used it during the war, to Bureau of Aeronautics, signifying completion of development and acceptance of the craft as a fleet weapon. The BAT radar picks up the target and transfers the intelligence to a scope within the "mother" plane, whose crew directs the latter towards the target and sets the

(*Turn to page* 94)



(Above) New Navy trainer Fairchild XNQ-1, all-metal two seater, powered by 320 hp *Lycoming* 9 cylinder engine, has flaps, retractable landing gear; span 41 ft. and top speed 170 mph. (Below) Navy amphibian XJL-1, built by Columbia Aircraft Corp., has catapult and arresting equipment, folding wings, retractable landing gear and Jato for takeoff in heavy seas



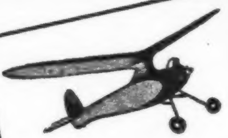


THE BABY "V" SHARK

Designed for Class "A" and "B" motors, the Baby Shark is ruggedly built of balsa, hardwood and plywood, with an all-steel landing gear. Its speed . . . 100 MPH . . . its 20-inch wingspread, and its Stanzel Champion performance make it an ideal model for a beginner.

$2.95

PLUS 25c POSTAGE



THE INTERCEPTOR

This Class "B" Free Flight Model, with a 52-inch wing span, posesses unusual climbing qualities. Its 350-square inches of wing area give it a remarkably flat and lingering glide, a top requisite in Free Flight planes. Simply constructed, sturdy, and easy to fly.

$2.98

PLUS 30c POSTAGE

THE TIGER SHARK

Recommended particurlarly to enthusiasts not interested in elevator control, the Tiger Shark is a single line model, designed for Class "C" motors. It features perfect flight performance, large wing area, and simplicity of construction.

$4.95

PLUS 30c POSTAGE

Model airplane designs perfected through years of research, experiment and improvement in manufacturing methods. Every Stanzel kit contains a proved champion . . . for every class!

STANZEL SUPER "V" SHARK

This SHARK is a top-flight model for Class "B" and "C" motors. It incorporates improved Roller Control Device, all-steel landing gear, and plywood and hardwood reinforced balsawood construction . . . streamlined for phenomenal speed of 120 MPH. Complete Kit . . . $4.95.

SEE YOUR LOCAL DEALER

VICTOR STANZEL & COMPANY

First in Control Line Flying

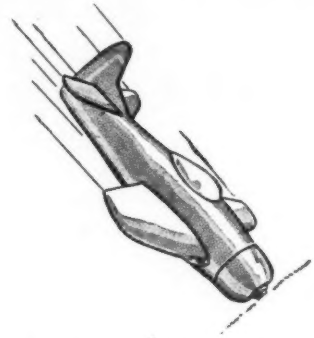
SCHULENBURG, TEXAS

Model Airplane NEWSLETTER

by AL LEWIS

AS PREDICTED in these columns less than a year ago, the contest season just passed set new records for number of contests held and size of the competitions. Towards late summer a meet which did not attract at least 10,000 spectators and 200 contestants was considered a "small" affair. How different from a few years ago when the spectator was an oddity and more than two dozen entrants a problem for the meet director!

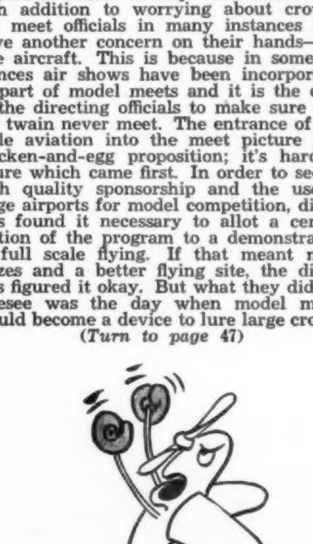
However, the number of large contests presents a puzzle with which we have not been faced until now. Big meets and important prizes mean high spectator interest, and with a large number of spec-



tators to handle, crowd-control becomes an important factor at any tournament.

In addition to worrying about crowds, the meet officials in many instances now have another concern on their hands—full size aircraft. This is because in some instances air shows have been incorporated as part of model meets and it is the duty of the directing officials to make sure that the twain never meet. The entrance of full scale aviation into the meet picture is a chicken-and-egg proposition; it's hard to figure which came first. In order to secure high quality sponsorship and the use of large airports for model competition, directors found it necessary to allot a certain section of the program to a demonstration of full scale flying. If that meant more prizes and a better flying site, the directors figured it okay. But what they did not foresee was the day when model meets would become a device to lure large crowds

(*Turn to page* 47)



BANTAM SWEEPS THE NATIONALS!

- **FIRST** place in the Junior Free-Flight Class "A" event.
- **FIRST** place in the Senior Free-Flight Class "A" event.
- **FIRST** place in the Junior Control line Class "A" event.
- **FIRST** place in the Senior Control line Class "A" event.

BANTAM MAKES A GRAND SLAM AT THE NATIONALS!

For the first time in gas model history every event in the class was won by the same motor—the sensational Bantam! No wonder the new Bantam is the talk of the model industry. No wonder too that it's the most wanted motor in the field. What other motor can equal this record? National Champion Class "A" 1939, 1940, 1941 and through the war years . . . and now a clean sweep of the 1946 Nationals!

Yes – **BANTAM IS ENGINEERED FOR CHAMPIONS**

$18.50 less coil and condenser

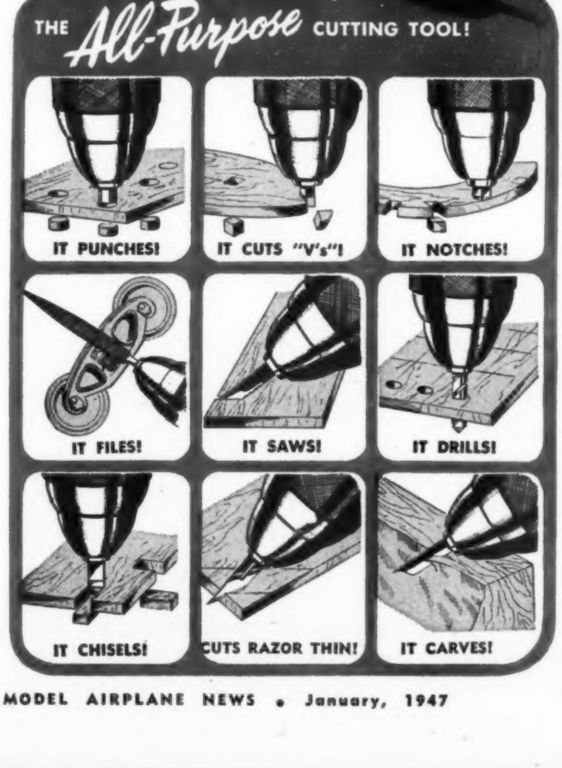
At Your DEALER'S NOW

BANTAM PRODUCTS INC.

Manufacturers of Miniature Gasoline Engines for Model Aircraft and Outboard Motors

51 CHAMBERS STREET, NEW YORK 7, N. Y. PLANT: CLIFTON, NEW JERSEY, U. S. A.

MAKE 1947 YOUR RECORD-BREAKING YEAR WITH



IT'S MAGIC AT YOUR FINGERTIPS!

Fellas—you've a real treat in store if you haven't as yet built your first model with GENIE TOOL. Soon we hope, all model dealers throughout the country will have this fine precision hand-tool available for you. However, if there isn't a dealer as yet in your city, then don't penalize yourself. Write us today and you will be advised where GENIE TOOLS may be obtained. GENIE TOOL, with the "keener" blades, minimizes the ever present danger of wood splitting—saves endless hours spent in notching, shaping. By all means, get YOUR GENIE TOOL Set today!

Send for Catalog!

MODEL TOOLS

DEPT. F • BOX 30 • BURBANK, CALIF.

There's a GENIE TOOL Accessory for Every Use!

WEST COAST TIPS

By JOHNNY DAVIS

OCTOBER certainly was contest month around Los Angeles and San Diego. First one on the agenda was the Santa Monica C.A.P. Annual. Walt Luther, leader member for A.M.A. in Santa Monica, deserves a lot of credit for the way the contest was run. Walt was all over the field during the day counselling and advising as problems came up.

There were a couple of exciting incidents which stirred things up in the afternoon. One came when Phil Babcock flew his six foot B-26 bomber on 90 ft. lines. While he was in the air some speed boy grew impatient and took off in the speed circle, which ordinarily would have been okay, but with 90 ft. of wire the B-26 was in *both circles.* Fortunately the speed job was only up about five laps and then came down; but while the two planes were overlapping, excitement ran wild.

Bobby Brown, 16-year-old vice president of *Lockheed Club,* with model he designed and built—the *Fleming Racer*

The other happening came 20 minutes later when a speed job broke its down wire and then tore loose from its up wire and went 300 ft. straight up, then power-dived in with motor full on. It really made a spectacular crash.

* * *

Second contest was the Pasadena Rose Bowl affair, sponsored by local Chamber of Commerce and the *Pasadena Model Club.* This was the first contest put on by the

(*Turn to page* 12)

Ced Galloway with the Boeing F4B4 control liner that has won him so many places in flying scale and best finish events

(*Continued from page* 10)

club, and it was nicely run. All the boys of the club worked hard and they had a good turnout. Credit for contest work and preliminaries goes to John Churchill, Bob Hock and Keith Storey, who worked on the difficult job of getting the Bowl for the contest. It seems the rich people around the Rose Bowl didn't want any noise, so the boys had to fight to get to use the Bowl at all. (Incidentally, it is a perfect place for a contest.)

* * *

On Sunday, Oct. 13, we went to a really bang-up contest in San Diego. The Western Regional Control Line Championship Contest was by far the best regulated and best organized contest we have yet seen. Mr. Scott and his helpers did a wonderful job, and really put on a show for the visiting contestants from Los Angeles. (The boys from L.A. did all right, too, taking 16 places out of the first 21.)

The contest was sponsored by San Diego *Journal* and *San Diego Airliners Club*. It opened at 8 a.m., with all first flights finished at 3 p.m., and officially ended at 10:30 p.m. with a lot of very tired contestants.

For the second time running, Wally Wallick beat his running mate Don Newberger in Class C speed. The rivalry between these boys is always good to watch. They are good friends, but do they try to beat each other!

In the Precision Individual Stunt we saw more upside down flying than at any previous contest, and at that old "Madman" Yates wasn't there due to the expectancy of cutting down on his income tax by a new addition to his family. However, Jim Saftig of San Diego, Davy Slagle and Bob Enright of Burbank, and Ed Lansberg of Hollywood all flew in the unorthodox and really had the spectators on edge.

Ced Galloway's famous F4B-4 led the flying scale event. He made the ship do everything in the book. In fact, once when he looped and then rolled his wheels on the ground his wife fainted dead away. Every time we see Ced take off with the Boeing we worry a little bit, 'cause Ced wants to fly upside down and the Boeing has an upside down tank in it!

Donald E. Smith had a tough time during the speed trials. His *Hassad*-powered ship had been blowing plugs all day (who isn't these days?) and finally he got it into the air. Just as she started to go the ship parted from the wires and went clear out of the stadium and over the top of the lights and disappeared, still going up. When the ship cleared the stadium, it looked as if it were hitting 150 mph. It was really "motating." Eventually they brought back the engine. There wasn't much left of the airplane, though.

We noticed one thing at the San Diego meet that we feel obligated to mention: none of the people directly responsible for the meet participated as a contestant. This is something that should be carried over in every meet. Surely there are enough meets throughout Southern California so that if a fellow misses one he can always fly in the next one. Too many times there has been unfavorable comment because a contest director participated in a meet he is running. A.M.A. rules state specifically that a contest director may not enter any contest he or she directs for purposes of award. As soon as we can iron out all these little details and get all contests on the same basis things will work out a lot better.

Following are complete results of the San Diego contest: San Diego Western Regional Control Line Championship, Oct. 13, 1946.

Flying Scale—1. Ced Galloway. 2. Bucky Monroe. 3. George Oliver.

Senior Stunt—1. Jim Saftig. 2. Davis Slagle. 3. Bob Enright.

Class A Speed—1. Norm Morgan. 2. Keith Conrad. 3. Les MacBrayer.

Class B Speed—1. Don Newberger. 2. Keith Storey. 3 Ray Benskin.

Class C Speed—1. Clarence Wallick. 2. Don Newberger. 3. Jim Saftig.

Team Stunt — 1. Snafu Wingtwisters. 2. The Hatchetmen. 3. Scanlon & Saftig.

Jr. Contestants—1. Don Gulotta. 2. Lawrence

(*Turn to page* 51)

MODEL AIRPLANE NEWS

YES SIREE! It's a KNOCKOUT XMAS GIFT ! ! !

JUST THE THING to give that special friend of yours. A gift that will make him remember you month after month . . . *for two whole years!* And it's a rock-bottom bargain, too . . . 24 big fat issues of MODEL AIRPLANE NEWS, that live magazine of the air, which every fellow is dying to read! Not one, but *twenty-four valuable presents* from you for only $3.00. Just think of it! The same MODEL AIRPLANE NEWS that you read . . . chockfull of the latest news of scale staff, flying specials, gliders, tether control, gas duration etc. Also in MODEL AIRPLANE NEWS you get the very latest "Big Ship" and aviation news which has become a commanding force in the world today. MODEL AIRPLANE NEWS is a magazine filled from cover-to-cover with fine, instructive reading that is as educational as it is entertaining.

You can't afford to overlook this special offer—it's a saving of $1.80 because 24 issues of MODEL AIRPLANE NEWS purchased monthly costs $4.80. Or if you prefer you can subscribe for one year at a cost of $2.00 thereby saving 40c.

While you're at it, why not be a Santa Claus to yourself. Send your own name, too, under this special offer and get your copies for the next two years at this bargain rate. REMEMBER . . . This is the *last and only* opportunity to subscribe at the reduced rate before increased price goes into effect with the February 1947 issue. *Get under the wire now and save money!*

24 BIG ISSUES ALL FOR ONLY $3.00

EFFECTIVE FEBRUARY 1947

WE SEND CHRISTMAS GIFT CARDS

A very attractive Gift Card with your name and greeting goes to each person you put down for a Gift Subscription.

MODEL AIRPLANE NEWS,
551 Fifth Ave., New York 17, N. Y. MA

Enclosed find $__________. Please send me Model Airplane News for __________

Send to__________

Address__________

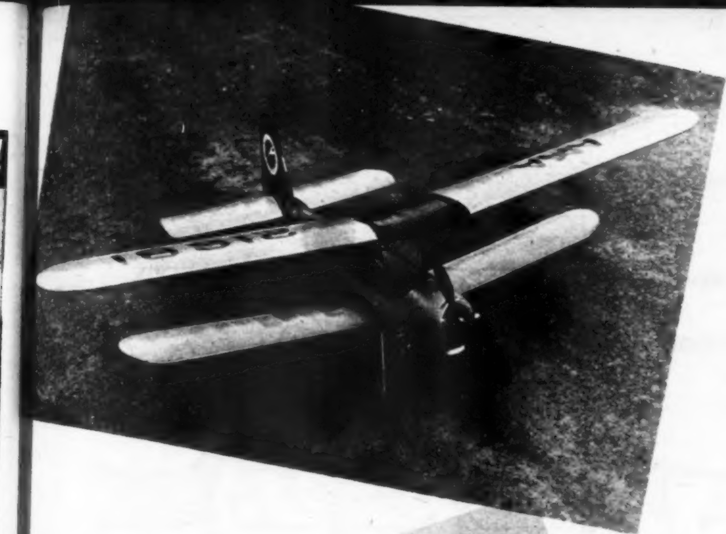
City__________ State__________

☐ Check here if Gift Card is to be sent.

Name of Sender__________

Offer good in the United States, Canada, U. S. possessions, Cuba, Mexico, Panama and South America.

YOUR MODEL IS IN THE WINNING CIRCLE, IF AN 'OK' IS IN THE FUSELAGE!
'OK' B-29
The First, the Only Engine with "2 SPEED TIMER"
Plan your "B" campaign around the new, all new — easy-starting, consistent-running "29" . . . 2 speed timer set-up permits installation of dual set of ignition points for 2 speed operation by remote control. New, improved needle valve; Beryllium Copper Thrust Ring fitted to crankshaft! More features, many more — plus low initial cost make "29" the foundation for a memorable career in "B" flying — free flight or controline. Complete with sparkplug, bakelite tank and Neoprene fuel-line. $15.50
ALL OK in name in performance
'OK' SUPER 60
With 3 position TIMER CONTROL
Super "60" — a mighty "C" power plant — features rotary valve with venturi opening over 1/3d diameter of cylinder bore; Patented porting; Oversize ball-bearing to take radial and thrust loads. Piston machined from steel (not stamped) hardened and lapped to cylinder. 3 position timer offers selective control in plane, race car or boat. Complete with spark-plug, bakelite tank and neoprene fuel line. $18.00
"OK" Raceway-Marine "60" "Keywayed" Crankshaft and Flywheel
"60" Raceway and Marine engines are block-tested at speeds exceeding 10,000 R.P.M. Piston precisely fitted with necessary extra clearance for top speed performance. Both crankshaft and fully, machine balanced flywheel are precision "Keywayed." Complete with spark plug, bakelite tank and Neoprene fuel-line $23.00
'OK' TWIN
With 1 Piece MONO-TYPE CONNECTING ROD
Delivers smooth, unwavering 1/2 hp despite extremely light weight (only 32 ozs.) Two opposed cylinders, simultaneous firing. Die-cast aluminum alloy crankcase, split-type. Ingenious crankshaft design for operation with mono-type (1 pc.) connecting rod. Unmatched power-to-weight ratio for largest models, radio-control and general experimentation. Complete with spark-plugs, bakelite tank and neoprene fuel line. $49.00
'OK' COIL
"OK" coil was created specifically for modern, high-compression engines. Delivers hot, intense spark; high voltage with low battery drain. Wound with many thousand turns of fine, enamelled wire, vacuum impregnated with superior insulating material. Resilient, ravel-proof, plastic coated extensions. In 2 sizes for single and twin cylinder engines.
"OK" IGNITION PACKS FOR SINGLE & TWIN CYLINDER ENGINES
Consists of "OK" Coil, Condenser and highly flexible, Multi-Strand, High Tension Lead. Dependable match-mate for "OK" or any miniature engines: Pack for single cylinder engine $3.00; Pack with oversize, twin-power coil for twin cylinder engines $6.00.
FREE! New "OK" Engine Brochure.
Includes hook-up diagrams, illustrations and specifications for each "OK" engine. If not available at a neighbor-dealer, write for copy direct to factory.
"Snap -to- Start"
HERKIMER TOOL & MODEL WORKS, INC. HERKIMER, NEW YORK
EXPORT OFFICE: 120 Wall St., New York, 5, N. Y. Cable address (all cables) Concordia, N. Y.



Part One

RAMBLER

by J. S. Luck

OF ALL the model aircraft I have designed, built and flown over a span of some twenty-odd years of active aeromodeling, few indeed have equalled this biplane for realism, performance and the fascination of flying an airplane. Because the *Rambler* is, and will probably remain, one of my greatest favorites, the drawings were prepared with rather more than the usual complement of full scale templates. This was done so that construction could be undertaken by both novice and expert builders with a minimum of tedious drafting.

Oh yes!—a last word before getting down to work. An unkind person once suggested that a better name for a model of this type would be *Dodo* (being a rather labored way of intimating that all bipes were as dead as one). To the contrary, facts show that even in these days of *Shooting Stars* and *Meteors, Mustangs* and *Spitfires*, the slower bipe is still being built and flown commercially. In certain specialized fields of aviation, notably flight training, the biplane has no equal.

Just for a change, it is suggested that all the full size templates on Plates 1 & 2, i.e. fuselage formers, ribs for upper wing, and stabilizer ribs, are transferred to balsa and cut out. Formers A to E should be of laminated balsa made by sandwiching 1/16" sheet between two sheets of 1/32" applied crossgrain and allowed to dry for five or six days under a weight. All other formers can be of either 1/8", 3/32" or 1/16" sheet, depending on the density of the material. While the stabilizer tip and center ribs should be of 3/32" sheet, the remaining ribs can be cut from 1/16" medium without sacrificing rigidity.

Lay out the *cabane struts* on 1/8" three-ply and saw them out. Be sure the drawing is properly understood before attempting to bevel the bottom edges. Make the wing bearers, or skids, and mortise them carefully to receive the tenons on the cabane struts —the strength of the entire wing mounting structure will depend on the accuracy and fit of this joint. Use a full size rib template to scribe in the proper contour along the top edge of the skid, but remember to allow for the 1/16" hard sheet wing platform and take care to cut on the exact bevel shown on the drawing. The best woods to make the skids are either poplar or American whitewood; but basswood, though rather soft, is quite usable. Before assembling the structure, cut two slots into each plywood strut-base to allow formers B & D to slip in egg-box fashion.

Make a full-size layout of the stabilizer. Pre-form both the leading and trailing edges, leaving them slightly oversize, and then assemble. Don't try to save time by omitting the notches in the T.E. for the ribs—they contribute much to strong, warp-free construction. When the cement has set thoroughly—takes about 24 hours—remove the structure from the board and finish off the stabilizer by adding the solid carved tips and sanding it carefully all over.

The fin is shown superimposed on a grid of 1/2" squares—this will materially assist in drawing it up full size. Fin components may then be cut out accordingly and assembled. The fin should be finished off with sandpaper before it is cemented to the stabilizer.

Make a plan of the top wing conforming to dimensions on Plate 2. Pre-form the trailing edge components and wing tips, and select the spars required from fairly hard straight-grained stock. Pin down the T.E. & L.E. over the drawing—the T.E. is shimmed 1/16" up from the board for accurate lower contour (see typical wing section on Plate 2). Set the ribs into the T.E. notches, and see that the ribs at the dihedral breaks are put in at the proper angle for the desired four inch dihedral. Lay in the 1/8" square, 3/8" x 3/16", and the 1/8" x 1/16" spars. Trim down the 1/4" x 1/4" L.E. as shown. While the work is still pinned down, apply the 1/16" sheeting over the upper

(*Turn to page* 55)

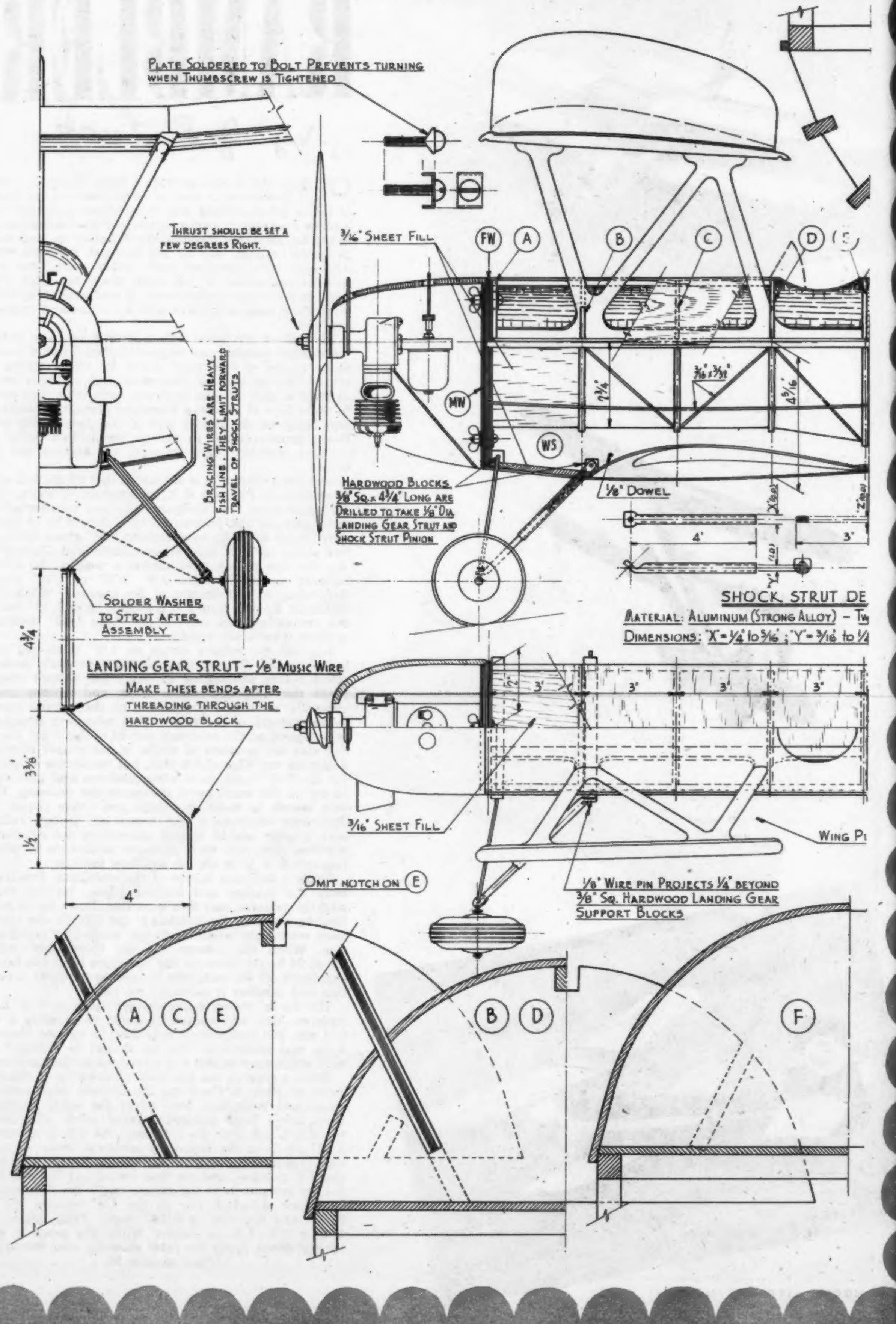
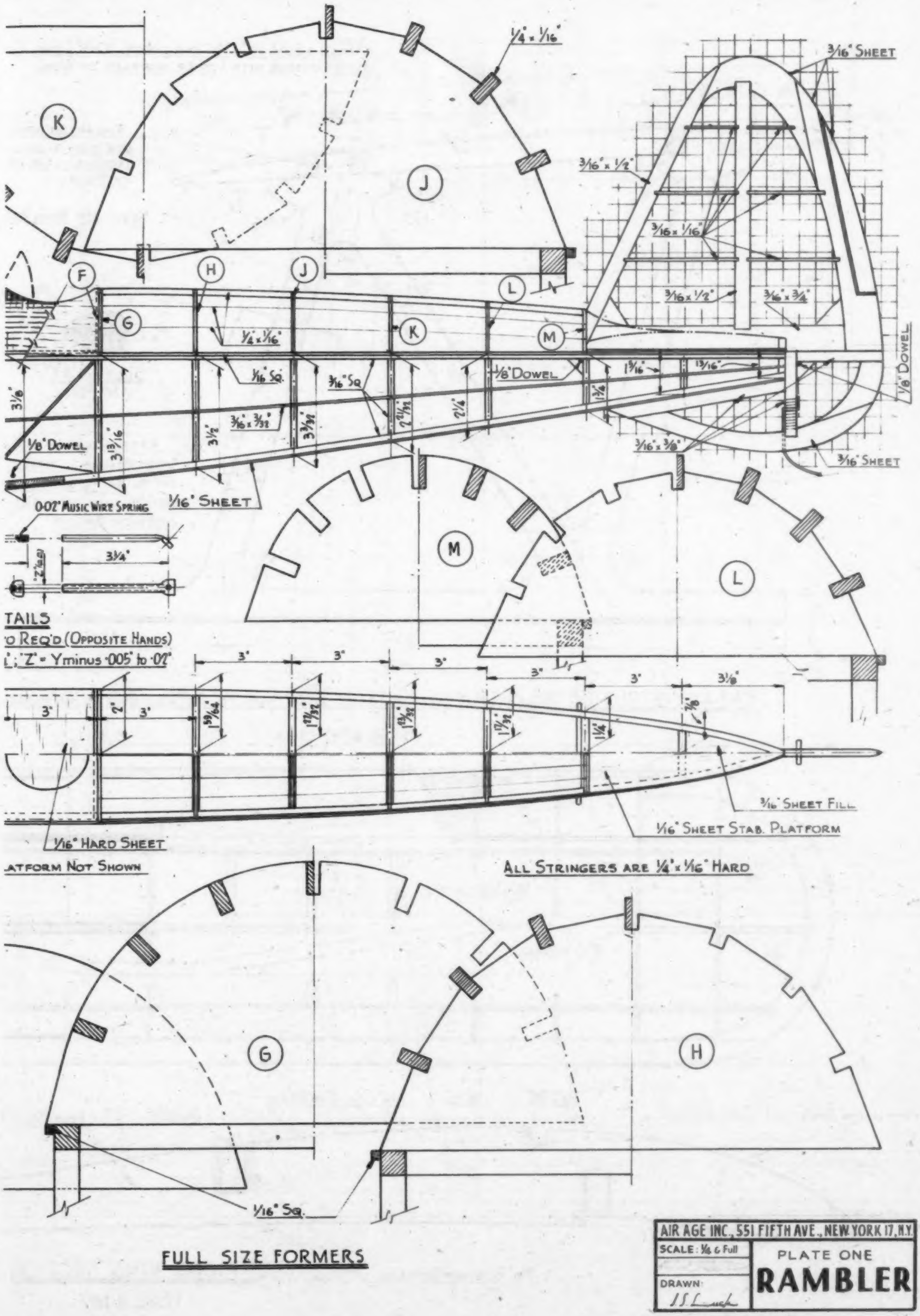
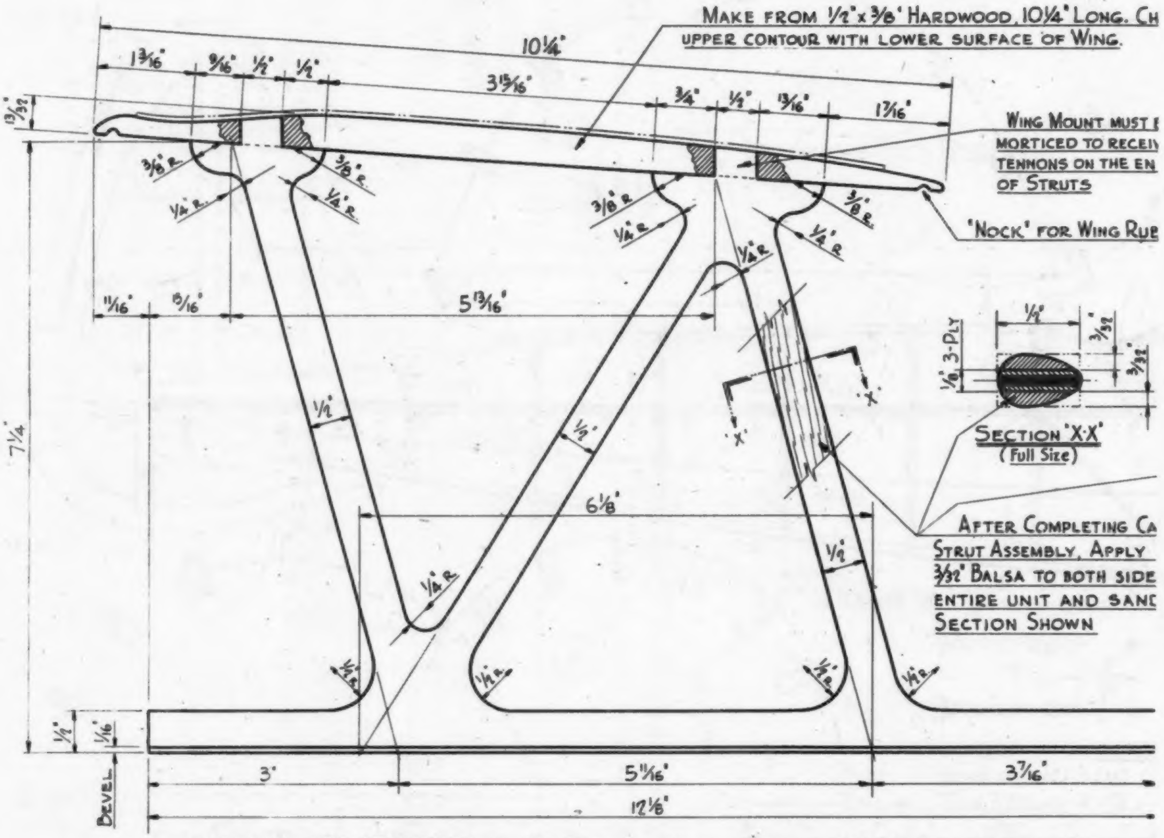
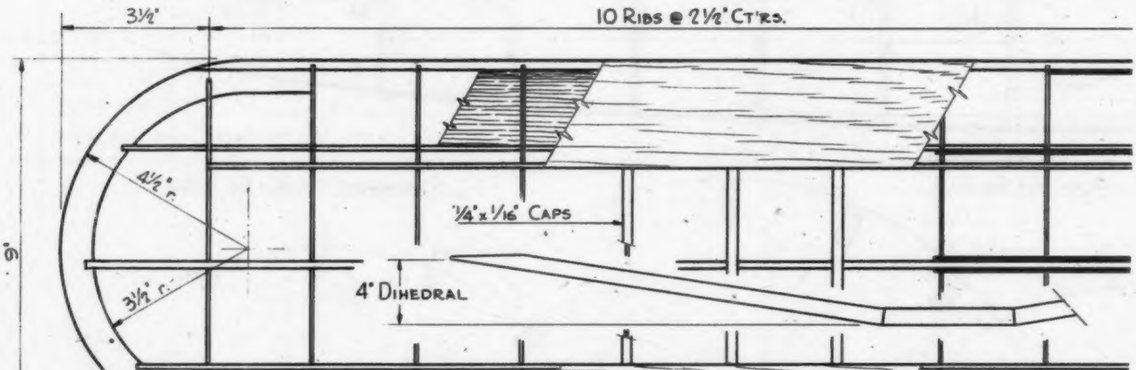


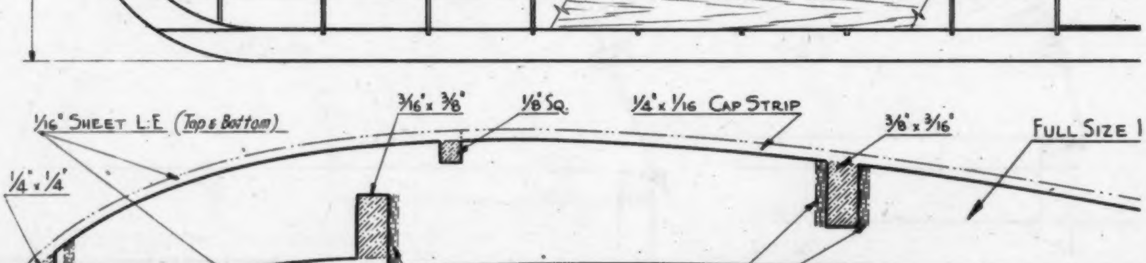
PLATE SOLDERED TO BOLT PREVENTS TURNING WHEN THUMBSCREW IS TIGHTENED
THRUST SHOULD BE SET A FEW DEGREES RIGHT.
3/16" SHEET FILL
FW
A
B
C
D
MW
WS
2 3/4
4 3/16
3/16" x 3/32"
BRACING 'WIRES' ARE HEAVY FISH LINE. THEY LIMIT FORWARD TRAVEL OF SHOCK STRUTS
HARDWOOD BLOCKS 3/8" SQ. x 4 3/4" LONG ARE DRILLED TO TAKE 1/8" DIA LANDING GEAR STRUT AND SHOCK STRUT PINION
1/8" DOWEL
4"
3"
SHOCK STRUT DE
MATERIAL: ALUMINUM (STRONG ALLOY) - TW
DIMENSIONS: "X" = 1/4 to 5/16 ; "Y" = 3/16 to 1/
SOLDER WASHER TO STRUT AFTER ASSEMBLY
4 3/4
LANDING GEAR STRUT - 1/8" MUSIC WIRE
MAKE THESE BENDS AFTER THREADING THROUGH THE HARDWOOD BLOCK
3 3/8
1 1/2
4"
3/16" SHEET FILL
WING PI
OMIT NOTCH ON E
1/8" WIRE PIN PROJECTS 1/4" BEYOND 3/8" SQ. HARDWOOD LANDING GEAR SUPPORT BLOCKS
A C E
B D
F


1/4" x 1/16"
3/16" Sheet
3/16" x 1/2"
3/16 x 1/16"
3/16 x 1/2"
3/16" x 3/4"
1/8" Dowel
3/16" x 3/8"
3/16" Sheet
1/4 x 1/16"
1/16" Sq.
3/16" Sq
3/16" x 3/32"
1/8" Dowel
1/8" Dowel
1/16" Sheet
0·02" Music Wire Spring
3 1/4"
TAILS
o Req'd (Opposite Hands)
; "Z" = Y minus ·005" to ·02"
3/16" Sheet Fill
1/16" Sheet Stab. Platform
1/16" Hard Sheet
atform Not Shown
All Stringers are 1/4" x 1/16" Hard
1/16" Sq.
FULL SIZE FORMERS
AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 1/8 & Full
DRAWN:
PLATE ONE
RAMBLER

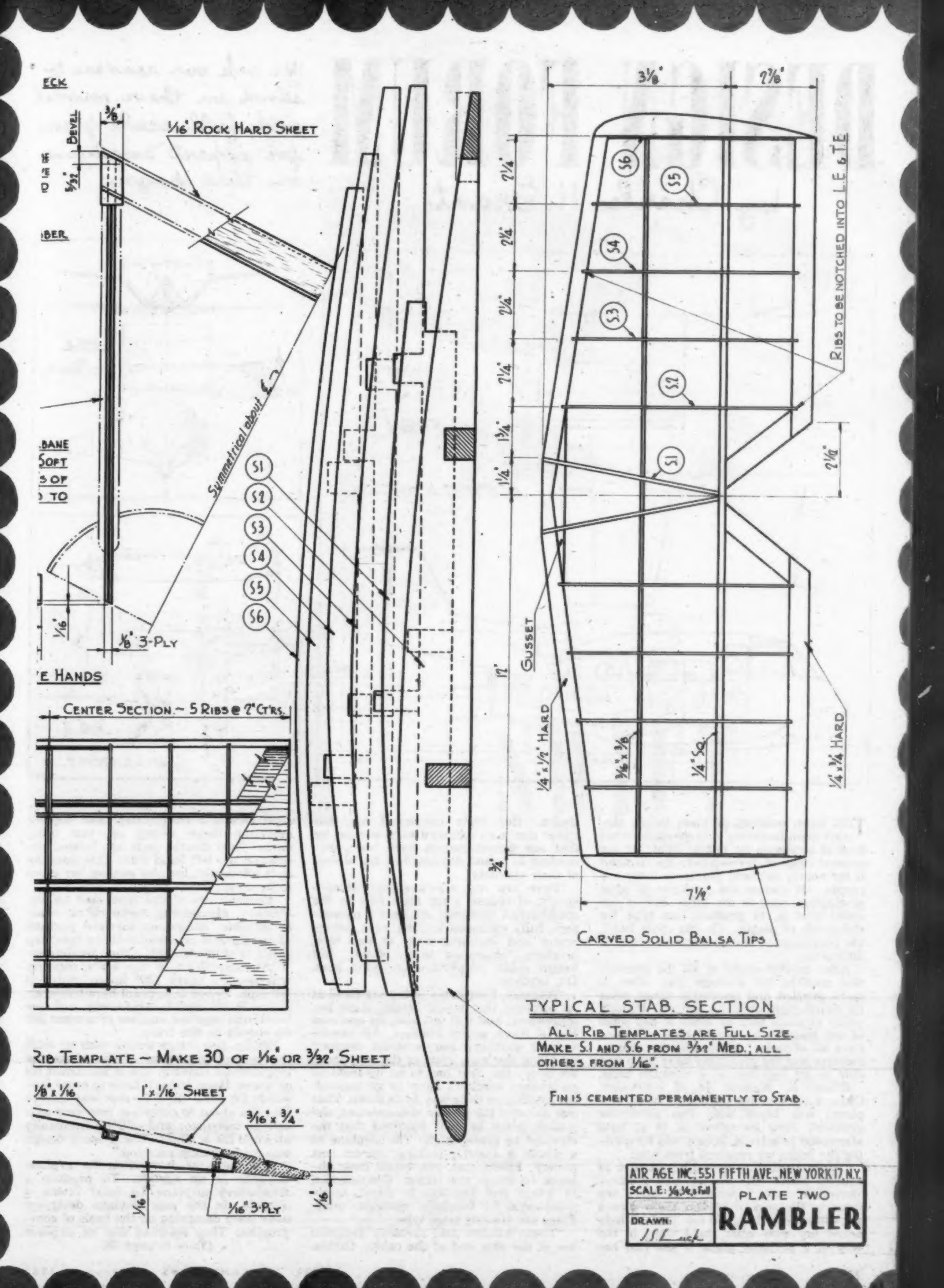


CABANE STRUT DETAILS (Half Size) ~ MAKE TWO FROM 1/8" 3-PLY; BEVEL OPPOSIT





TYPICAL WING SECTION
(Full Size)

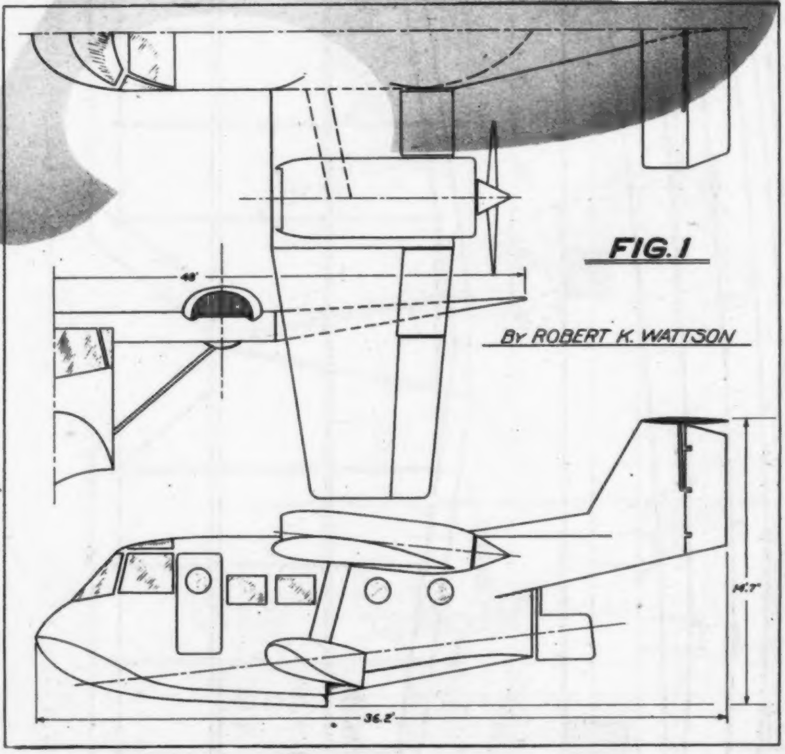


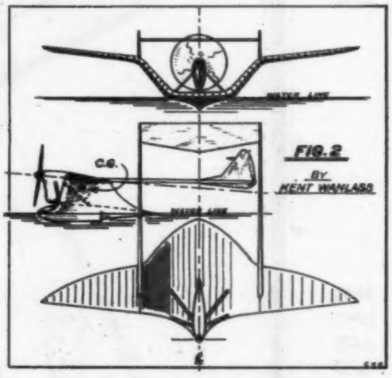
ECK
BEVEL
3/8"
1/16" ROCK HARD SHEET
3/32"
BER
Symmetrical about ℄
BANE
SOFT
S OF
D TO
1/16"
1/8" 3-PLY
E HANDS
CENTER SECTION ~ 5 RIBS @ 2" CTRS.
RIB TEMPLATE ~ MAKE 30 OF 1/16" OR 3/32" SHEET.
1/8" x 1/16"
1" x 1/16" SHEET
3/16" x 3/4"
1/16"
1/16" 3-PLY
1/16"
S1
S2
S3
S4
S5
S6
TYPICAL STAB. SECTION
ALL RIB TEMPLATES ARE FULL SIZE.
MAKE S.1 AND S.6 FROM 3/32" MED.; ALL OTHERS FROM 1/16".
FIN IS CEMENTED PERMANENTLY TO STAB.
3 1/8"
2 7/8"
2 1/4"
2 1/4"
2 1/4"
2 1/4"
1 3/4"
1 1/4"
12"
3/4"
RIBS TO BE NOTCHED INTO L.E. & T.E.
2 1/2"
GUSSET
1/4" x 1/2" HARD
3/16" x 3/8"
1/4" SQ.
1/4" x 3/4" HARD
7 1/4"
CARVED SOLID BALSA TIPS
AIR AGE INC. 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 1/4, 1/2, & Full
DRAWN:
PLATE TWO
RAMBLER

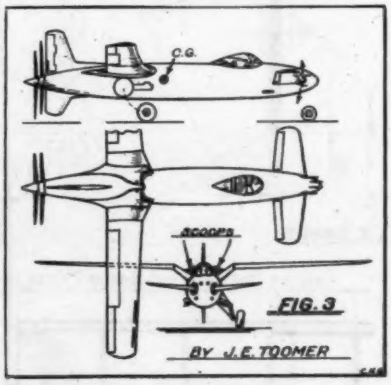
DESIGN FORUM

by Charles H. Grant

We ask our readers to send in their model and full scale plans for expert analysis on this page.







THE most puzzling problem facing aircraft manufacturers is to ascertain what kind of airplanes the public want. At the present stage of development the demand is for nearly as many planes as there are people. Of course the problem of mass production rises at the other end of the scale; that is, to produce one type for thousands of people. On the other hand, the purchaser of any airplane also has his difficulties.

After careful study of all the production models, the average flier often is more puzzled and uncertain about what he wants than when he started. Usually every airplane that he looks at has some of the features he would like, but none have all of them. Apparently the manufacturer and the purchaser have been unable to get together on a common basis.

Robert K. Wattson Jr. of Stillwater, Okla., a prospective purchaser of an airplane, was faced with this particular problem. How he solved it, or at least attempted to solve it, is best told by quoting the letter we received from him:

"After reading an incredible number of articles about the *Navion* and kindred 'personal' craft, I decided to carry the issue to the sort of person these planes are supposedly designed for. So I blithely asked my *wife* what she'd want in the way of a personal plane if she had her choice. Her reply convinced me that either she is an extraordinary woman, or that our manufacturers have been proceeding in casual disregard of the wishes of their clientele.

"Here are my wife's specifications—spotty, of course, since she's new to the specification business: At least 8 passengers, fully equipped kitchen, or a refrigerator and warming oven at any rate, lavatory, 'someplace to lie down,' full height cabin, amphibian or flying boat. Oh, brother!

"Anyway, I sat down to try my hand at an airplane that would satisfy these requirements and still not look, fly and cost like a Navy patrol bomber. Of course various auxiliary requirements cropped up along the way, such as the one about the door—the door had to be up front so passengers wouldn't have to go through the kitchen on their way to sit down. That one dictated the pusher arrangement; the pusher props in turn required that the elevator be placed high. The airplane as a whole is angular-looking; curves cost money. Fillets cost, too, hence their absence on wings and struts. Construction of wings and fuselage is dural, semi-monocoque for fuselage, monospar wing. Flaps are trailing edge type.

"Those kitchen and lavatory facilities are at the rear end of the cabin. On the right side is a longitudinal seat accommodating three sitting up, one lying down. Two double seats are behind the pilot on the left hand side. This puts the aisle off-center, but she wanted her place to lie down, didn't she?

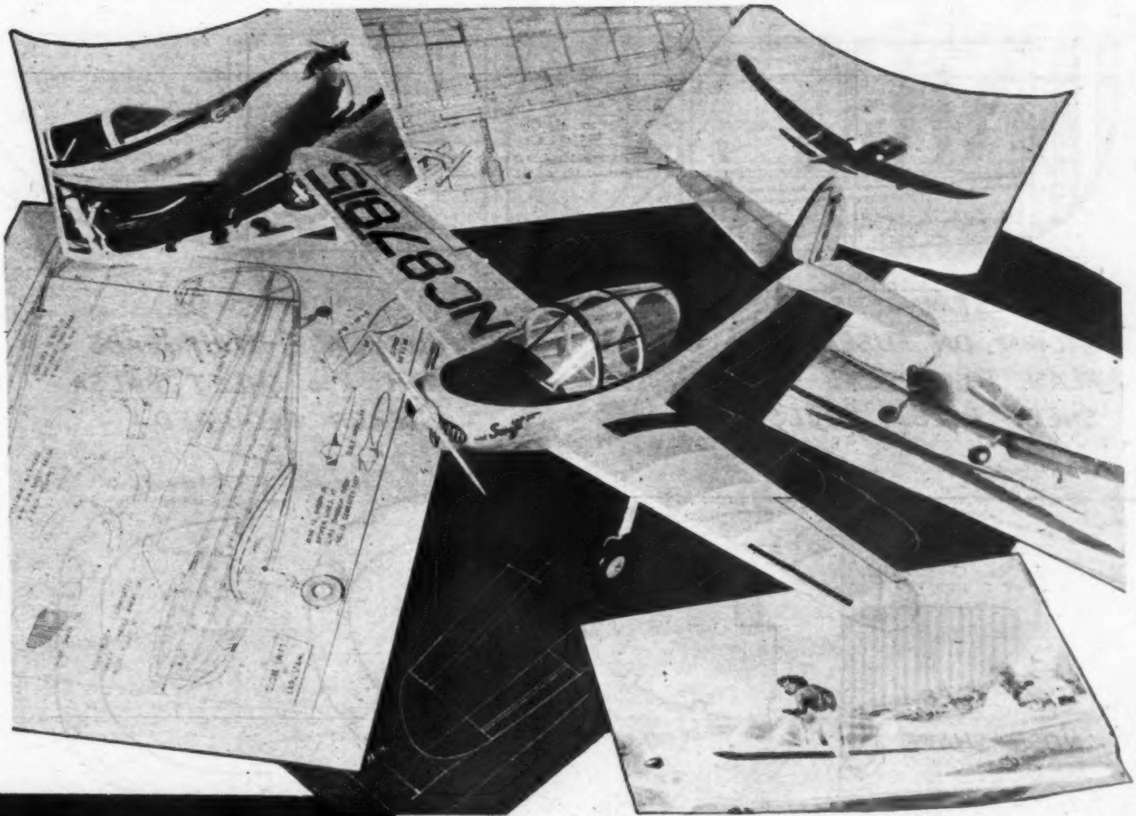
"Controls are of the type used on the *Ercoupe*, eliminating footwork as much as possible. Maximum forward position of the throttle provides cruising rpm; top speed is obtained with a foot accelerator.

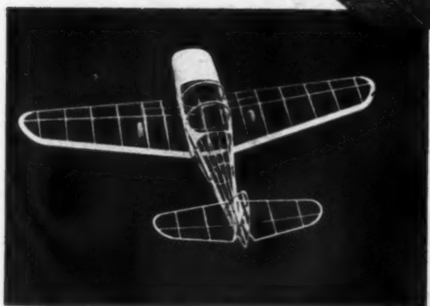
"An amphibian of the same capacity will require about 1200 hp to cruise at 180 mph. Speed is no point here however; as low as 120 mph is satisfactory, and two horizontal opposed engines of around 300 hp should do the trick.

"Still a few things wrong with it: with the present placement of the wings the longitudinal stability would be almost nil or worse, those wings'll have to come forward; I'd draw them in that way except that I'm about to enter my first year as a college instructor and will be frantically at work for a while. The present design was made during vacation."

Now there you have what the airplane designer is up against. To produce a satisfactory airplane he must create a miracle. In the past airplane designers have been designing on the basis of compromise. They assumed that an airplane

(*Turn to page* 78)





Model Globe SWIFT

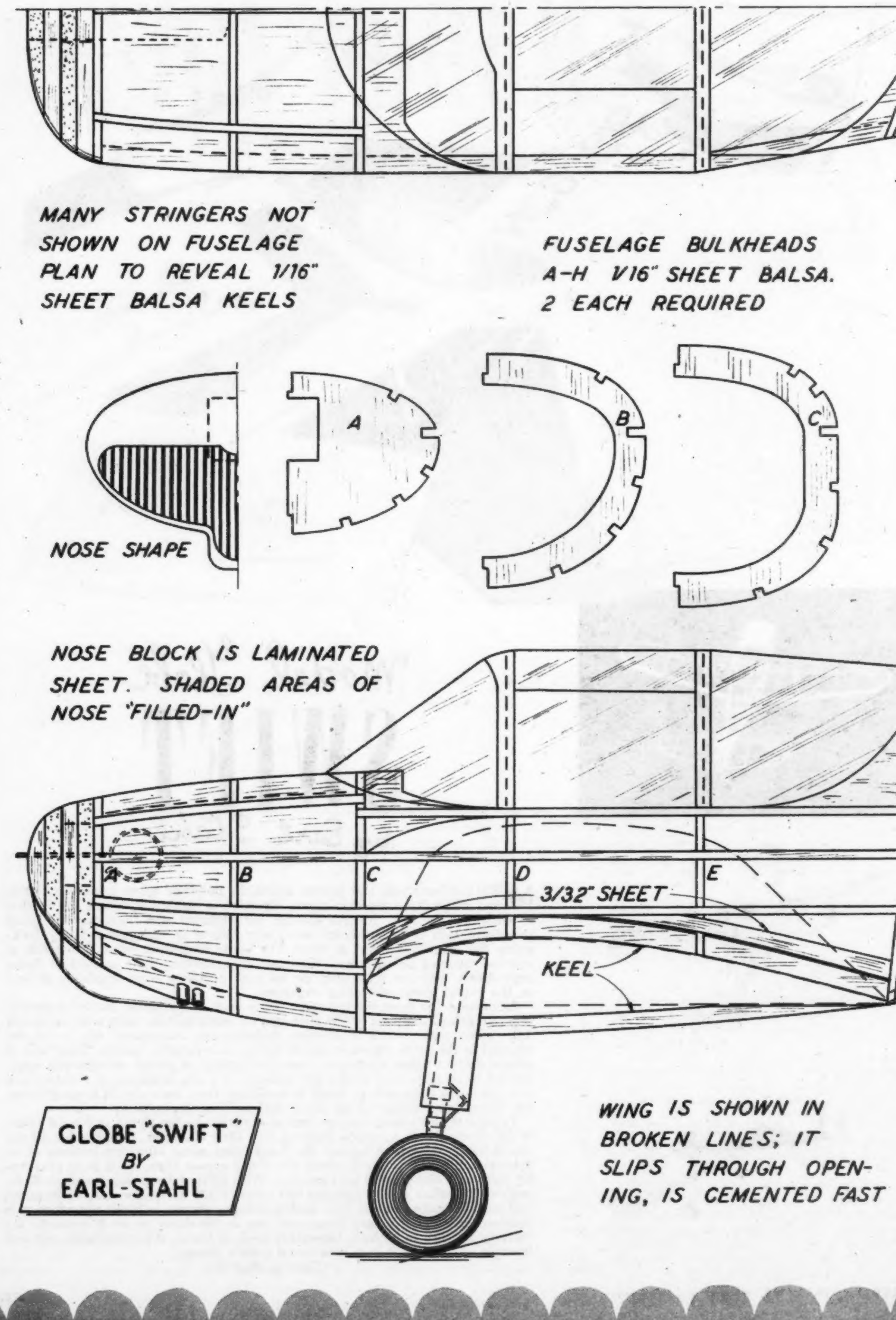
by Earl Stahl

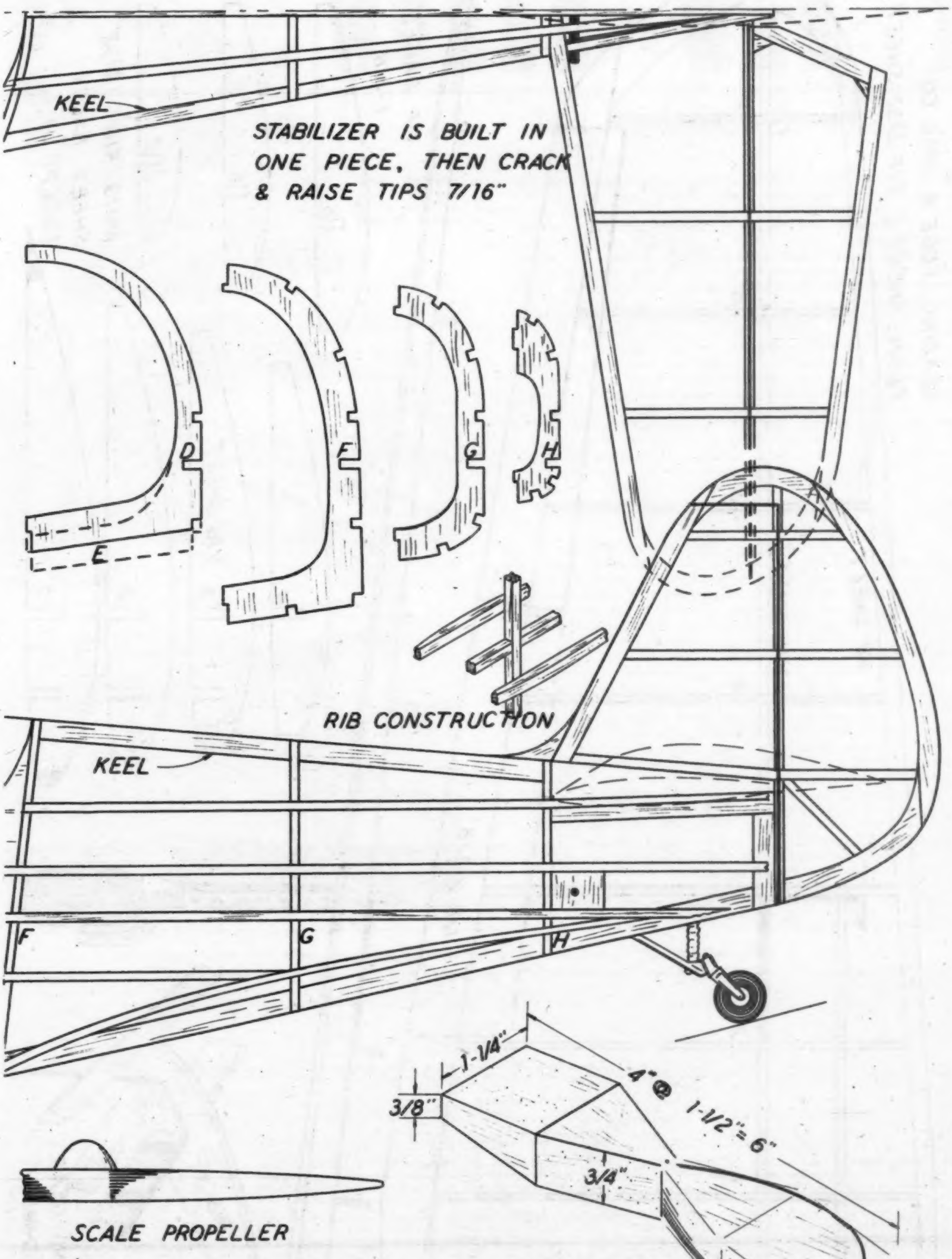
MUCH has been said and written about the potential boom in private flying, and while it is true that young America is tugging to break the leashes of earthdom to soar through the air for pleasure and business, the great transformation to the predicted scene of clouds of private planes fairly darkening the skies is not yet at hand. For while thousands upon thousands of aviation minded persons are interested in furthering their individual flying aspirations, they are frustrated by the high purchase costs of planes as well as the rather great operating expenses.

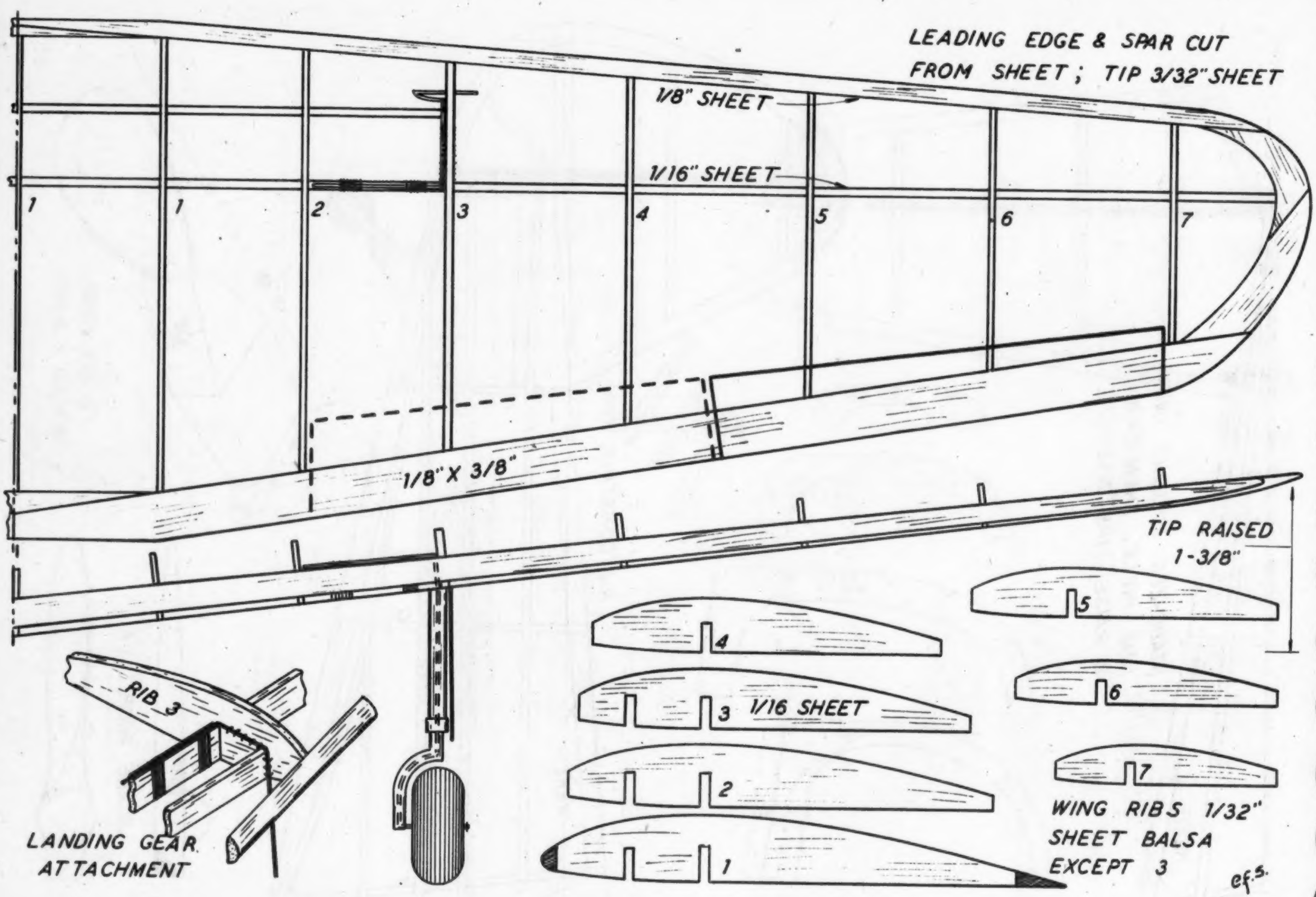
At present the most modest sport plane costs about twice that of a prewar popular priced car, and while fuel and oil consumption compares favorably with these autos, costs of storage, maintenance, insurance, etc. boost the amount to the point where it makes flying an expensive luxury. Time will of course correct these conditions; mass production of planes structurally engineered to be fabricated in the fast manner of a car, lowering of maintenance and operating costs will go hand in hand and then, once this is accomplished, the flying age envisioned by many will perhaps be upon us.

Typical of the planes fast becoming available to the flying public of today is the Globe *Swift*, a snappy looking, fast little sportster. Looking for all the world like a miniature fighter, the *Swift* gains many admirers because of its appearance. But that is not where the ship's appeal ends, for it is an easy-to-fly craft with exceptional performance. With pilot and passenger and an 85 hp engine, it cruises at 125 mph for 600 miles; a 125 hp engine can be installed and speed is even greater. The undercarriage retracts in flight but when it is lowered and the flaps are depressed, the *Swift* slows up so it eases to the runway at close to 45 mph. Staunchly built of metal, it is unusually safe and durable. All in all it is a sportsman pilot's dream.

(Turn to page 85)


MANY STRINGERS NOT SHOWN ON FUSELAGE PLAN TO REVEAL 1/16" SHEET BALSA KEELS
FUSELAGE BULKHEADS A-H 1/16" SHEET BALSA. 2 EACH REQUIRED
A
B
C
NOSE SHAPE
NOSE BLOCK IS LAMINATED SHEET. SHADED AREAS OF NOSE "FILLED-IN"
A
B
C
D
E
3/32" SHEET
KEEL
WING IS SHOWN IN BROKEN LINES; IT SLIPS THROUGH OPENING, IS CEMENTED FAST
GLOBE "SWIFT" BY EARL-STAHL


KEEL
STABILIZER IS BUILT IN
ONE PIECE, THEN CRACK
& RAISE TIPS 7/16"
D
E
F
G
H
RIB CONSTRUCTION
KEEL
F
G
H
1-1/4"
3/8"
4" @ 1-1/2" = 6"
3/4"
SCALE PROPELLER
FLYING PROP.
6"X 3/4" X 1-1/4"
e.f.s.


LEADING EDGE & SPAR CUT
FROM SHEET; TIP 3/32" SHEET
1/8" SHEET
1/16" SHEET
1
1
2
3
4
5
6
7
1/8" X 3/8"
TIP RAISED
1-3/8"
RIB 3
LANDING GEAR
ATTACHMENT
1/16 SHEET
WING RIBS 1/32"
SHEET BALSA
EXCEPT 3
ef.s.

WORLD WAR I

by Robert C. Hare

Ernst Udet with the D.IV fighter in which he flew to fame

ONE afternoon early in October 1918 a flight of four brand new German pursuit planes rose from an aerodrome near Stenay, rendezvoused at a pre-determined altitude over the field and headed for the lines. This scene was no novelty in the fifth year of World War I, but in this case there was special significance to the event. Germany's greatest living ace, Ernst Udet, was leading the patrol; the ships were the new Siemens Schuckert D.IV pursuits which the Fatherland was throwing into the fight in a frantic last ditch effort to avoid seemingly inevitable defeat in the war.

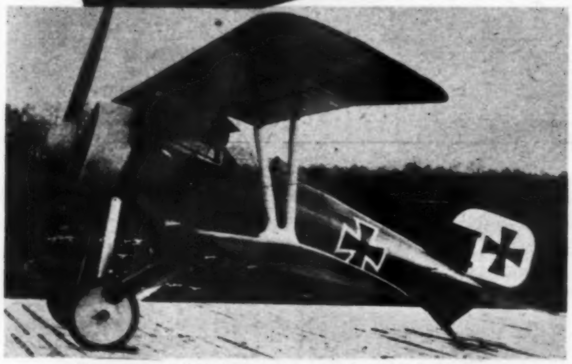
In the light of history, the SSW D.IV, as the airplane was officially identified, had no bearing on the war's outcome; but it is a matter of record that this nimble little fighter did, on more than one occasion before cessation of hostilities, scare the living daylights out of scores of Allied pilots. And, sad to relate, it managed to kill a number of them too.

The outstanding story of the SSW D.IV, however, is not relative to its success as a weapon of war. World War I ended before it could reach the front in effective quantities. The real story concerns the combination of the D.IV and its motor, the Siemens *Halske SH.III*, a fighting duo if ever there was one. With this novel motor Siemens engineers were able to make the D.IV do a lot of things that marked it outstanding as a fighting plane. Without the SH.III, the D.IV would have been just another airplane.

Origin of the D.IV goes back to its immediate predecessor, the SSW D.III, a pursuit biplane that was entered by the Siemens Schuckert concern in a contest for airplanes of its type in January 1918 at the Imperial Air Service testing and experimental station located at Aldershof, Germany. The SSW D.III made an excellent showing except that its performance was somewhat lopsided. The D.III had a then phenomenal rate of climb, some 6,562 ft. the first three minutes for an average of 2,187 fpm! This by far exceeded anything any other manufacturer had been able to accomplish in the way of climb, but this virtue had been gained at the expense of others also necessary in the makeup of a good pursuit plane. To show how far Siemens engineers went in the climb direction, the SSW D.III had a service ceiling of 26,576 ft., and at this altitude it could still climb at nearly 100 fpm! And it arrived at its service ceiling in 36 min. flat!

Performance was not very good otherwise for the D.III could hardly hold its own with most pursuit airplanes with its 112 mph top speed at sea level, but its two-hour full throttle air endurance was about average. This terrific climb was attained with a wing loading of a shade over 8 lbs. per sq. ft., a power loading of 10.31 lbs. per hp, the SH.III motor and a monstrous propeller which was nearly

(*Turn to page 88*)



Siemens Schuckert SSW D.III pursuit; note circular cowl without bottom cutout and horizontal style rudder

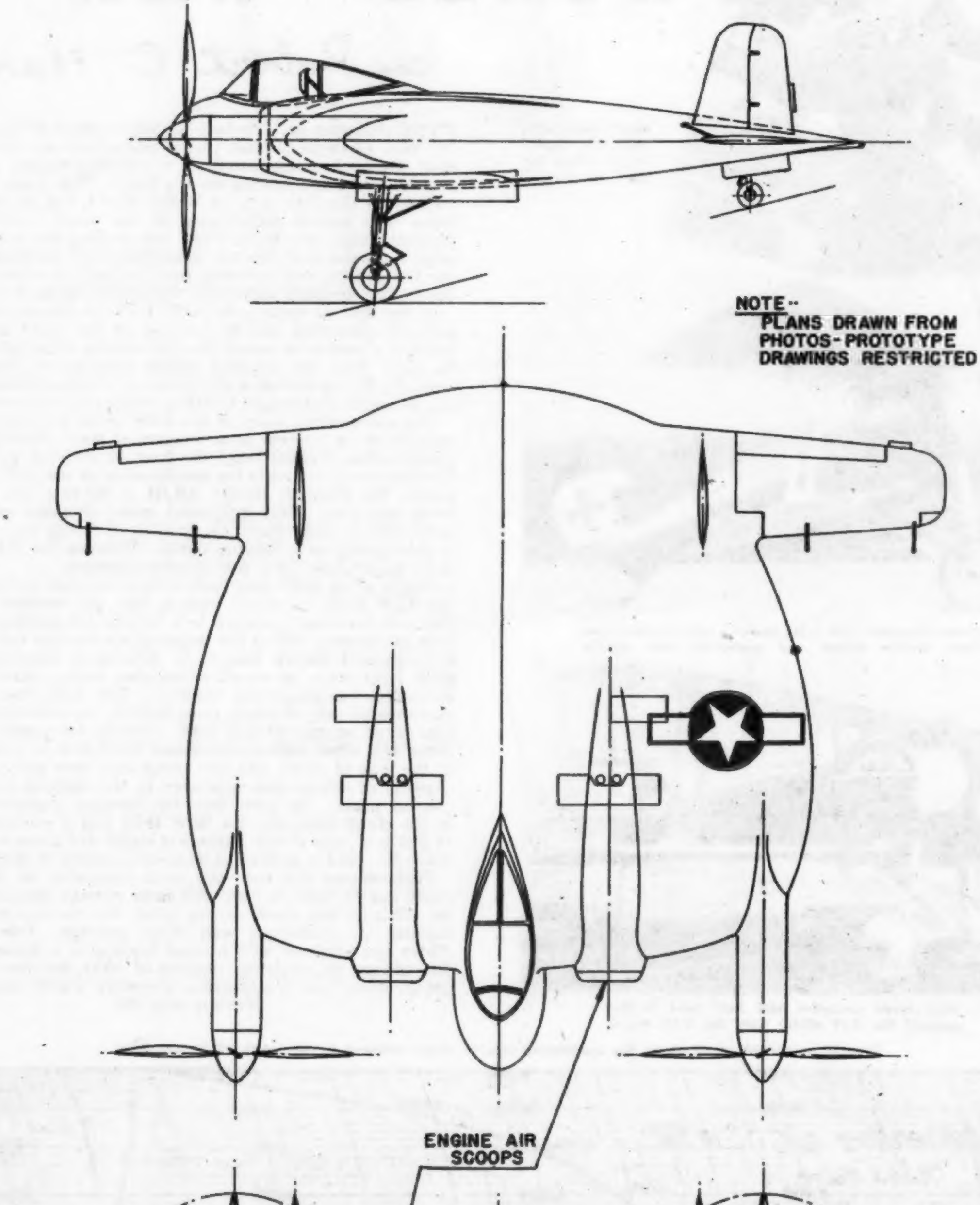
Four blade propeller and half cowl distinguished the D.IV model from the D.III above

Copy of barograph which shows the remarkable rate of climb achieved by the early 1918 SSW D.III

CHANCE - VOUGHT
XF5U-I

DRAWN BY-
A.V. SIGNORELLI

NOTE--
PLANS DRAWN FROM
PHOTOS - PROTOTYPE
DRAWINGS RESTRICTED



--DATA--
ENGINES R-2000-2
SPEED .... 40 TO 425 MPH

Plane on the cover story
by Robert McLarren

VOUGHT XF5U-1

AERONAUTICAL science has been built on two foundation stones: theoretical mathematics and experiment. The first of these is the classic approach to the problems of flight as expounded by such giants as Prandtl, Munk and von Karman in Germany, Lanchester and Glauert in England, Joukowski in Russia and Ferri in Italy. From these men and their students has come the whole body of fundamental theory comprising aerodynamics as we know it today. There has been no American contribution of profound importance to this basic theory and the United States has borrowed the whole of its knowledge of this subject from abroad.

But the other foundation stone, experiment, has found no more prolific nation in all the world than the U. S. Chanute, the Wrights, Langley, Montgomery, Curtiss, Burgess, Gallaudet, Martin, Douglas, Bell, Grumman, Northrop—the list is endless. These men chose the "cut and try" method, the historic path of Yankee ingenuity that revolutionized world industry, transportation, communication and entertainment.

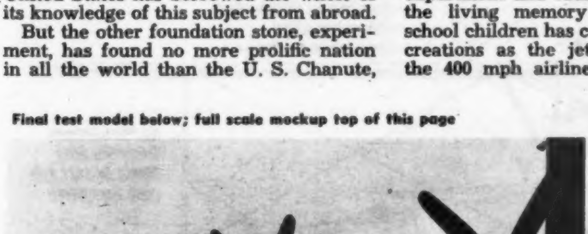
But aviation is still too young to be termed "history." You and I are still pioneers in aviation, for the time for its stabilization, maturity and constancy is not yet. Today, more than 40 years since man first flew, we are still in an era of experiment and radical developments. In the living memory of mere grammar school children has come such astonishing creations as the jet propelled airplane, the 400 mph airliner, the *Flying Wing*, the 115 ton bomber, the 11,237 mile patrol plane and the *Flying Pancake*, our Plane on the Cover this month.

As with all aviation stories, the tale of the Vought XF5U-1 starts with a man and an idea. And, like most aviation stories, the man bore an obscure name and the idea seemed highly illogical at the time. The idea was a "round wing" and the man was Charles H. Zimmerman. Upon completion of his education in 1930, Zimmerman went to work at the Langley Memorial Aeronautical Laboratory of NACA.

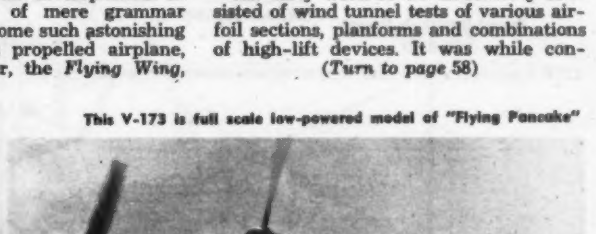
His early work at the Laboratory consisted of wind tunnel tests of various airfoil sections, planforms and combinations of high-lift devices. It was while con-

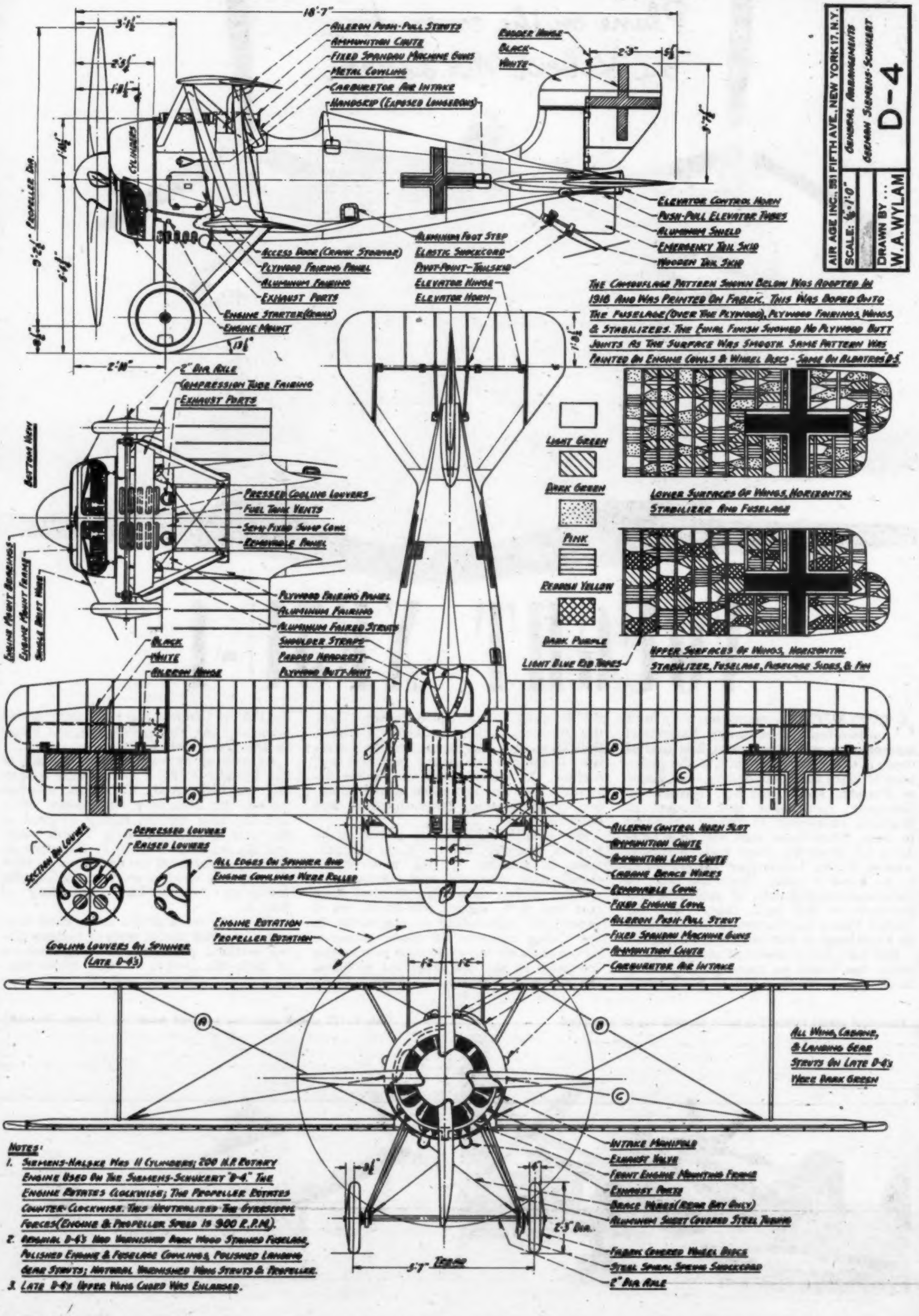
(*Turn to page 58*)

Final test model below; full scale mockup top of this page



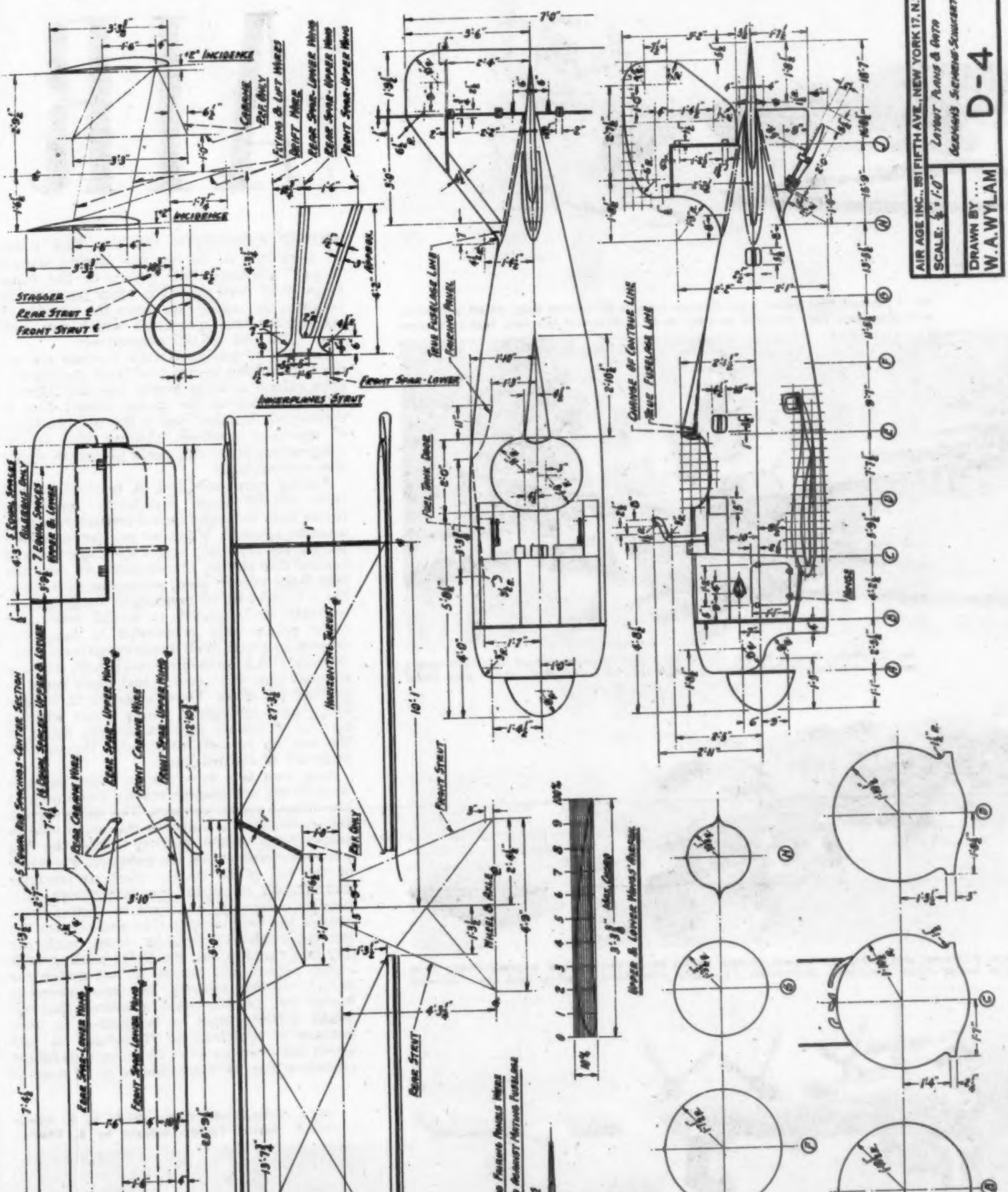
This V-173 is full scale low-powered model of "Flying Pancake"

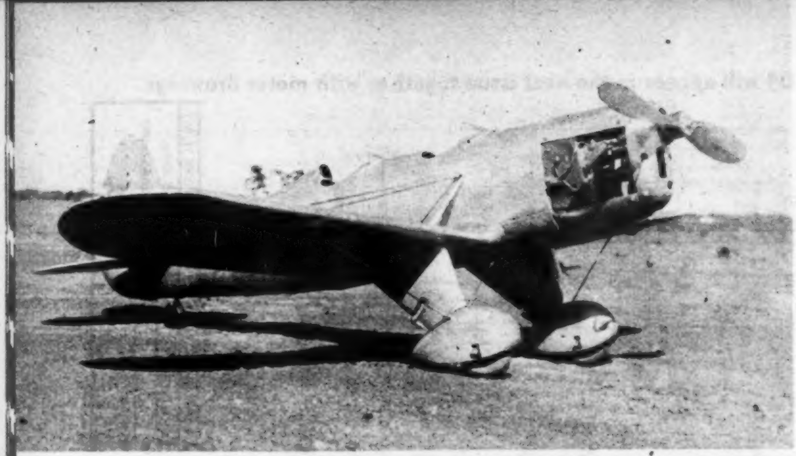




AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 1/4"=1'0"
GENERAL ARRANGEMENTS
GERMAN SIEMENS-SCHUCKERT
D-4
DRAWN BY ...
W. A. WYLAM
18'-7"
3'-1 1/2"
2'-3 1/4"
1'-8 1/2"
9'-2 1/2" PROPELLER DIA.
5'-8"
2'-10"
2'-3"
5'-7 1/2"
AILERON PUSH-PULL STRUTS
AMMUNITION CHUTE
FIXED SPANDAU MACHINE GUNS
METAL COWLING
CARBURETOR AIR INTAKE
HANDGRIP (EXPOSED LONGERONS)
RUDDER HINGE
BLACK
WHITE
CYLINDERS
ELEVATOR CONTROL HORN
PUSH-PULL ELEVATOR TUBES
ALUMINUM SHIELD
EMERGENCY TAIL SKID
WOODEN TAIL SKID
ALUMINUM FOOT STEP
ELASTIC SHOCKCORD
PIVOT-POINT-TAILSKID
ELEVATOR HINGE
ELEVATOR HORN
ACCESS DOOR (CRANK STARTER)
PLYWOOD FAIRING PANEL
ALUMINUM FAIRING
EXHAUST PORTS
ENGINE STARTER (CRANK)
ENGINE MOUNT
THE CAMOUFLAGE PATTERN SHOWN BELOW WAS ADOPTED IN 1918 AND WAS PRINTED ON FABRIC. THIS WAS DOPED ONTO THE FUSELAGE (OVER THE PLYWOOD), PLYWOOD FAIRINGS, WINGS, & STABILIZERS. THE FINAL FINISH SHOWED NO PLYWOOD BUTT JOINTS AS THE SURFACE WAS SMOOTH. SAME PATTERN WAS PAINTED ON ENGINE COWLS & WHEEL DISCS - SAME ON ALBATROS D-5.
2" DIA. AXLE
COMPRESSION TUBE FAIRING
EXHAUST PORTS
BOTTOM VIEW
LIGHT GREEN
DARK GREEN
PINK
REDDISH YELLOW
DARK PURPLE
LIGHT BLUE RIB TAPES
LOWER SURFACES OF WINGS, HORIZONTAL STABILIZER AND FUSELAGE
UPPER SURFACES OF WINGS, HORIZONTAL STABILIZER, FUSELAGE, FUSELAGE SIDES, & FIN
PRESSED COOLING LOUVERS
FUEL TANK VENTS
SEMI-FIXED SHEET COWL
REMOVABLE PANEL
ENGINE MOUNT BEARINGS
ENGINE MOUNT FRAME
SINGLE DRIFT WIRE
PLYWOOD FAIRING PANEL
ALUMINUM FAIRING
ALUMINUM FAIRED STRUTS
SHOULDER STRAPS
PADDED HEADREST
PLYWOOD BUTT-JOINT
BLACK
WHITE
AILERON HINGE
A
B
C
AILERON CONTROL HORN SLOT
AMMUNITION CHUTE
AMMUNITION LINKS CHUTE
CABANE BRACE WIRES
REMOVABLE COWL
FIXED ENGINE COWL
AILERON PUSH-PULL STRUT
FIXED SPANDAU MACHINE GUNS
AMMUNITION CHUTE
CARBURETOR AIR INTAKE
SECTION ON LOUVER
DEPRESSED LOUVERS
RAISED LOUVERS
ALL EDGES ON SPINNER AND ENGINE COWLINGS WERE ROLLED
COOLING LOUVERS ON SPINNER (LATE D-4'S)
ENGINE ROTATION
PROPELLER ROTATION
ALL WING, CABANE, & LANDING GEAR STRUTS ON LATE D-4'S WERE DARK GREEN
INTAKE MANIFOLD
EXHAUST VALVE
FRONT ENGINE MOUNTING FRAME
EXHAUST PORTS
BRACE WIRES (REAR BAY ONLY)
ALUMINUM SHEET COVERED STEEL TUBING
2'-5" DIA.
5'-7" TREAD
FABRIC COVERED WHEEL DISCS
STEEL SPIRAL SPRING SHOCKCORD
2" DIA. AXLE
NOTES:
1. SIEMENS-HALSKE WAS 11 CYLINDERS; 200 H.P. ROTARY ENGINE USED ON THE SIEMENS-SCHUCKERT "D-4." THE ENGINE ROTATES CLOCKWISE; THE PROPELLER ROTATES COUNTER-CLOCKWISE. THIS NEUTRALIZED THE GYROSCOPIC FORCES (ENGINE & PROPELLER SPEED IS 900 R.P.M.).
2. ORIGINAL D-4'S HAD VARNISHED DARK WOOD STAINED FUSELAGE, POLISHED ENGINE & FUSELAGE COWLINGS, POLISHED LANDING GEAR STRUTS; NATURAL VARNISHED WING STRUTS & PROPELLER.
3. LATE D-4'S UPPER WING CHORD WAS ENLARGED.

Further details of the Siemens Schukert D4 will appear in the next issue togeth er with motor drawings





No. 1 (above) Fine model from Mexico, a Ryan ST control liner which is covered with aluminum foil. Powered by *Ohlsson 60* this ship is the very tops in realism

No. 2 (above) Buddy Nulph with 9 ft. Piper *Trainer* powered by a *Dennymite* motor. Built-up construction is employed, utilizing pine, cedar and balsa

Nos. 3 (above) and 4 (below) A most unusual model by Ed Sharp—four engined flying wing with buried *Super Cyclones*. Automatic flaps and retractable landing gear are featured

News of model airplane e[...] all over

AIR

SUPER CONTESTS—On the East Coast were held in the last few months several "super" contests, and others of the same scope have been staged in other parts of the country. By "super" we mean the number of contestants and spectators which ran well over 1,250 and 125,000 respectively.

As may be imagined such contests are indeed something to run, and from the experience gained at these events two big difficulties stand out so far as the model flier is concerned. Number one is the old headache of spectator control; number two is the competition from full scale planes in flying demonstrations.

Taking item one first, it is obvious that with 125,000 eager spectators something better than the usual crowd control measures must be adopted. When we see the onlookers wandering aimlessly across the Class C speed control line circles, or swarming all over the free flight takeoff area, we can be sure trouble is in store for all concerned. Judging from contests we attended, it would seem that more police help is needed to keep the crowds in place. Well-meaning private individuals, C.A.P. personnel and others who are pressed into this service just don't seem to get the job done. Those engaged in contest flying have enough to worry about without having spectators step on models, stand in the way on takeoffs, or stumble through his prize set of control lines.

Item two is a new one in some respects since flying demonstrations are given only at the largest model contests. The difficulty for the model flier is that it is the usual rule to suspend all model activity while the big plane demonstrations are going on. For some of the big plane events—such as landings and takeoffs, or target plane launchings—it is usually necessary for safety to clear a large area of the field as well. Can you picture the harried modeler's feelings when, with the day fast running out, the timer waiting with watch poised, and having at last gotten his motor running sweetly, the announcement blares out on the loud speakers that all model activity must be suspended at once because a squadron of "Dingbats" is just about due over the field. Or he and his fellow modelers may be requested to go at once to

No. 5 (bottom left) Culver PQ-14 by A. Wilson
No. 6 (below) Tailless biplane by E. Tileston

experimenters from the world

WAYS

another part of the field so that a temperamental target plane can be launched.

No—we are reaching the conclusion that big plane activity has no place at a model plane meet, unless the former is handled in such a way that it will put no damper whatsoever on model flying. To be sure many people come to meets to see the big planes perform, but many will be satisfied solely with model flying, as has been amply demonstrated at meets that featured models alone.

That these problems are serious enough to attract official attention will be obvious to those who have read "Model Airplane Newsletter" on page 6 of this issue. Much thought must be given to this subject, and meet sponsors should ask themselves frankly whether they intend to put on a model airplane contest or simply a "spectacle" at which the model builder runs a poor second.

THE RULES AGAIN!—Some ideas on changing rules for model meets were presented in "Model Airplane Newsletter" of our November 1946 issue with a request that contest directors check results of their own meets. One change recommended was that each entry have three official flights, one delay, and count only the highest single flight in scoring. Walt Good, whose ideas were aired in the column mentioned, found that such a system had practically no effect on the placing of meet winners as tabulated on the present system of averaging (or totaling) times for three official flights.

Now comes a plea to keep the rules as they are, from Dutch Hess of the *DeKalb Cloud Dusters,* based on results of several meets in which he was involved. Dutch gives the following figures for a DeKalb meet:

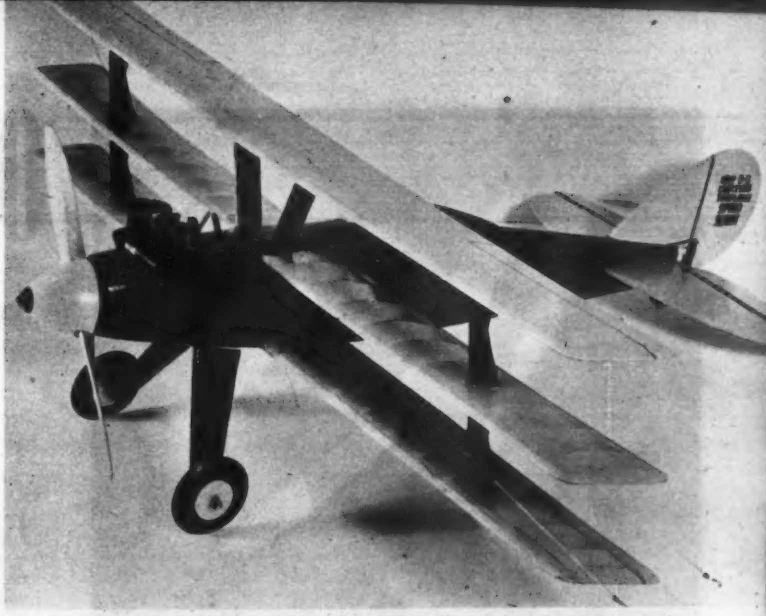
CLASS C

1st place, 3 flight total 20:38—longest single flight 10:16
2nd place, 3 flight total 17:43—longest single flight 13:12
3rd place, 3 flight total 16:10—longest single flight 12:58

CLASS B

1st place, 3 flight total 11:42—longest single flight 5:53
2nd place, 3 flight total 10:27—longest single flight 8:24
3rd place, 3 flight total 10:06—longest single flight 5:55

It will be seen from this listing that the first place winner would drop to third in each case, were the longest single flights used as the sole scoring basis. Only in Class A did the winner also have the longest single flight. (*Turn to page 64*)



No. 12 (above) Beautiful Curtiss triplane with Copper *King* motor has motor control

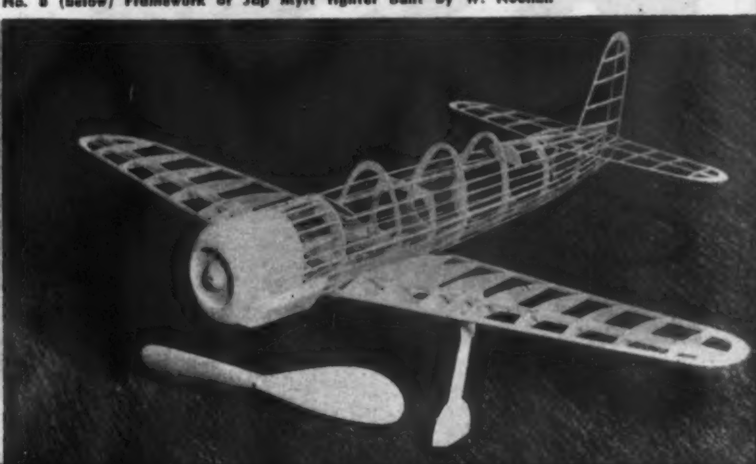
No. 11 (below) Design from Holland built in Michigan by Ernst Budke is very successful

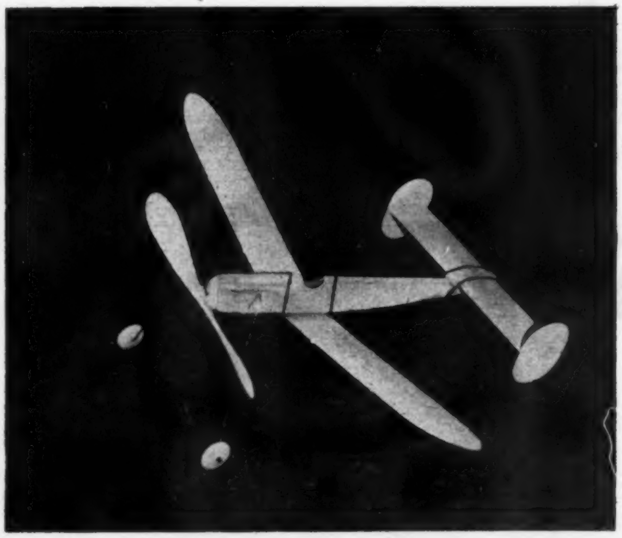
No. 9 P. Spalinger with rubber model which won second place in 1945 Swiss Nationals

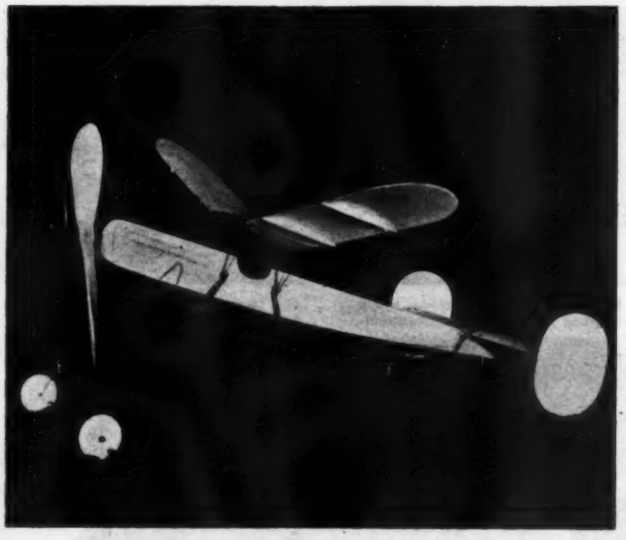
No. 10 Aime Robert holds 14 oz. free flight rubberpowered *Spitfire*

No. 7 A glider from Argentina which Fernando Rueda tells us has very fine performance

No. 8 (below) Framework of Jap Myrt fighter built by W. Noonan







OIL-E-BIRD

by Charles H. Grant

The Oil-E-Bird (a 3 in 1 model) is an ideal beginner's project as well as a test ship for the expert

IT IS the ambition of every model builder to design, build and fly a consistent contest winning plane, and usually their attention is so concentrated on this single objective that they attempt to solve the problem in one complete jump. Usually they examine other models which have won contests and try to improve upon them regardless of whether or not they have had previous experience. Results are generally disappointing because producing a contest winner is not a simple matter.

Even for the experienced it requires construction of several prototypes before the bugs have been worked out and the final plane takes the air. To build complicated prototypes is not only difficult but requires many building hours. It is much more satisfactory to work out problems of general design and stability by building and testing simple, all-balsa planes. These can be built and changes in design can be made quickly where required. In this way the time of developing a real contest winner can be cut in half.

The all-balsa prototype need not even be made full size; it can be made half size, for example, without changing its general stability characteristics. After the design has been worked out, wings, tail surfaces, propeller and other parts can be shaped for maximum efficiency. Besides, all-balsa models provide many pleasant flying hours and practice in flight adjustment.

There is a real meaning to the little plane presented here. It is only 18" in wingspread (22" if preferred) but embodies many features and the general proportions of a contest winner—the cambered lifting stabilizer, twin fins and large propeller, for instance. Besides, the parts of this model can be arranged in several different positions: the wing can be placed beneath the fuselage to form a low wing, or can rest on struts clipped to the upper side of the body to form a parasol job. If made of wire, these struts can be bent down or up to provide different degrees of parasol—one with the wing close to the fuselage and others with it resting in higher position. It can even be flown as a stick model without the landing gear.

So with the few hours of work required to build this plane you can test several types of models and demonstrate their flying characteristics. Flights can be made with wing and stabilizer at different angles with every wing position, thereby working out the most efficient setting of these surfaces. In fact, this model serves well as a model for future contest winners. It is one of the easiest to build, requiring only a few more operations than a simple stick model, and is especially adapted to beginners who may have difficulty with more complicated paper covered jobs.

Before starting construction examine the three-view plans closely and make sure you have a clear picture of every construction detail. This will save much material, time and patience. Start by constructing the fuselage. Two side pieces are cut from 1/32" balsa to outline given in the patterns. Then a nose and a tail bulkhead are cut out. These are triangular pieces as shown in the patterns. Cement the two side pieces (A) to the nose bulkhead (B) so they join along their upper straight edges. The tail bulkhead (C) is then cemented to rear ends of the side pieces. Pin these firmly in place and make sure they are straight. Turn the fuselage bottom side up and spread cement inside the V joint the whole length of the fuselage, thereby joining the two side pieces at the apex of the V. Allow to dry thoroughly; meanwhile cut out the side stiffen-

ers (D) and lower fuselage across braces (E) as shown in the plans.

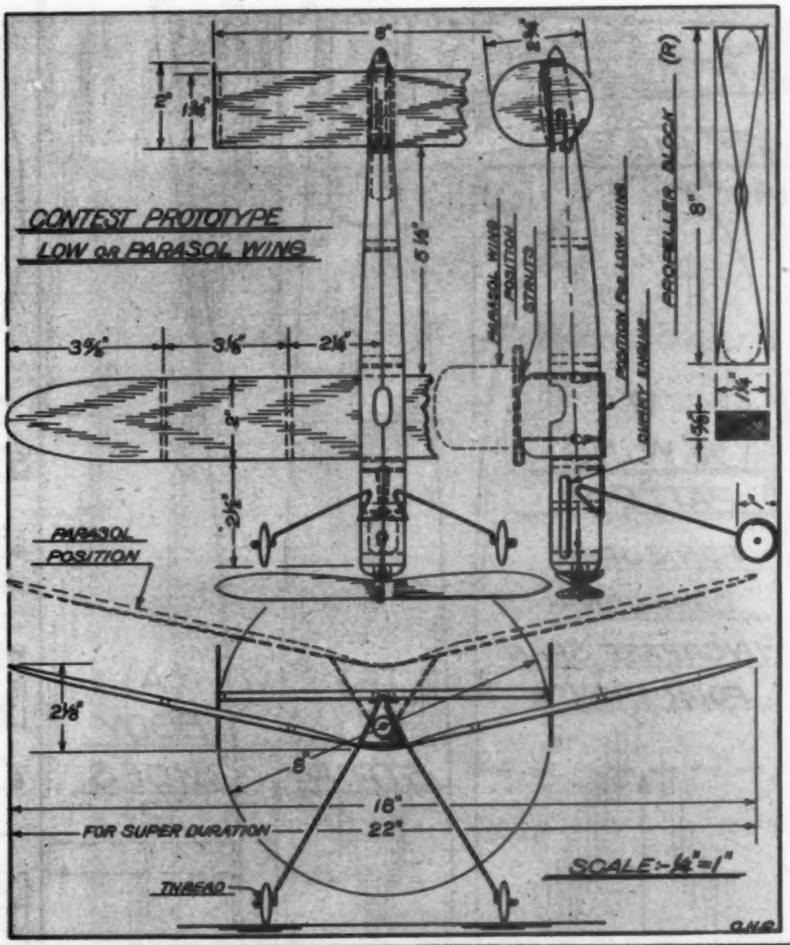
The fuselage belly strip (F) can also be cut out. When the cement of the V joint along the upper edge of the fuselage is dry, cement the side stiffeners (D) to sides of the fuselage at their locations as indicated in the three-view plans. Then cement crosspieces (E) in place, making sure their lower edges are flush with lower edges of the fuselage sides. Use clamps and pins to hold these in place.

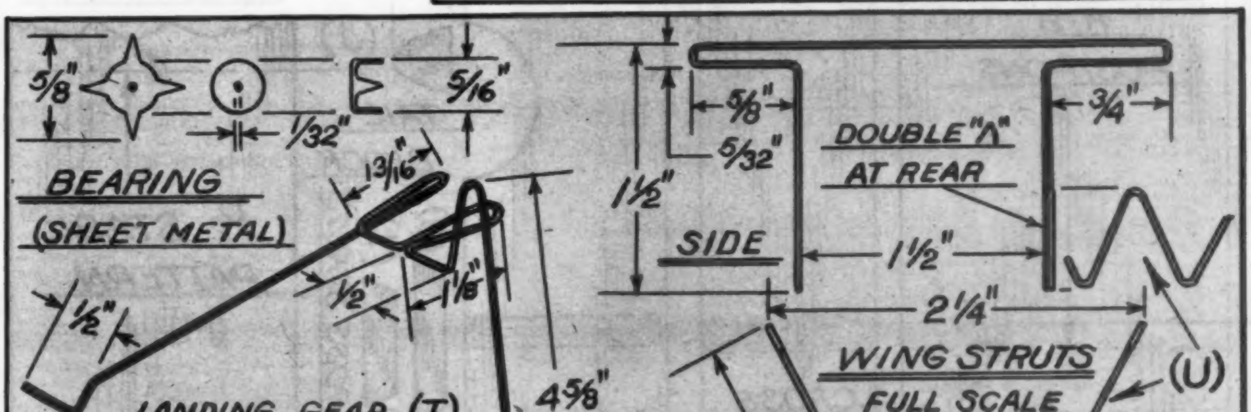
Cut out the rear motor anchor block (G). Bend the rear motor hook and tail skid (H) to correct shape from 1/32" wire and hook it into the rear anchor block as shown in (I). Cover the wire with plenty of cement where it contacts the wood, then cement the whole unit in place in the V of the fuselage about 1-1/4" from the rear (see plans). The bottom of the fuselage now can be cemented in place. Cover the lower edges of the sides, crosspieces, nose and tail block with cement. Press the bottom in place holding it firmly with pins until dry. Meanwhile cut out a small pyramid of balsa for tail block (J) and cement it to tail of the fuselage. This completes its streamline form.

Next cut out bearing block (K) from 1/4" thick balsa with grain running vertically. Drill 1/8" hole through this as indicated. From a piece of tin or other sheet metal cut out the bearing, bending back the four ears as shown in the drawing. Punch or drill a 1/32" hole through its center and press it into the bearing block so the hole in the metal plug is centered with the hole in the block. If necessary cut 4 small slots in the block so the ears of the metal plug can be pushed easily into the balsa. Use cement to hold it in place.

When complete, cement the block to

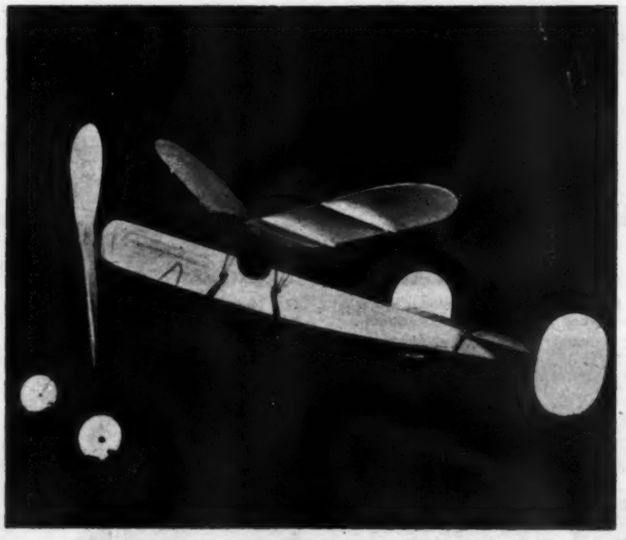
(*Turn to page 55*)





OIL-E-BIRD

by Charles H. Grant



The Oil-E-Bird (a 3 in 1 model) is an ideal beginner's project as well as a test ship for the expert

IT IS the ambition of every model builder to design, build and fly a consistent contest winning plane, and usually their attention is so concentrated on this single objective that they attempt to solve the problem in one complete jump. Usually they examine other models which have won contests and try to improve upon them regardless of whether or not they have had previous experience. Results are generally disappointing because producing a contest winner is not a simple matter.

Even for the experienced it requires construction of several prototypes before the bugs have been worked out and the final plane takes the air. To build complicated prototypes is not only difficult but requires many building hours. It is much more satisfactory to work out problems of general design and stability by building and testing simple, all-balsa planes. These can be built and changes in design can be made quickly where required. In this way the time of developing a real contest winner can be cut in half.

The all-balsa prototype need not even be made full size; it can be made half size, for example, without changing its general stability characteristics. After the design has been worked out, wings, tail surfaces, propeller and other parts can be shaped for maximum efficiency. Besides, all-balsa models provide many pleasant flying hours and practice in flight adjustment.

There is a real meaning to the little plane presented here. It is only 18" in wingspread (22" if preferred) but embodies many features and the general proportions of a contest winner—the cambered lifting stabilizer, twin fins and large propeller, for instance. Besides, the parts of this model can be arranged in several different positions: the wing can be placed beneath the fuselage to form a low wing, or can rest on struts clipped to the upper side of the body to form a parasol job. If made of wire, these struts can be bent down or up to provide different degrees of parasol—one with the wing close to the fuselage and others with it resting in higher position. It can even be flown as a stick model without the landing gear.

So with the few hours of work required to build this plane you can test several types of models and demonstrate their flying characteristics. Flights can be made with wing and stabilizer at different angles with every wing position, thereby working out the most efficient setting of these surfaces. In fact, this model serves well as a model for future contest winners. It is one of the easiest to build, requiring only a few more operations than a simple stick model, and is especially adapted to beginners who may have difficulty with more complicated paper covered jobs.

Before starting construction examine the three-view plans closely and make sure you have a clear picture of every construction detail. This will save much material, time and patience. Start by constructing the fuselage. Two side pieces are cut from 1/32" balsa to outline given in the patterns. Then a nose and a tail bulkhead are cut out. These are triangular pieces as shown in the patterns. Cement the two side pieces (A) to the nose bulkhead (B) so they join along their upper straight edges. The tail bulkhead (C) is then cemented to rear ends of the side pieces. Pin these firmly in place and make sure they are straight. Turn the fuselage bottom side up and spread cement inside the V joint the whole length of the fuselage, thereby joining the two side pieces at the apex of the V. Allow to dry thoroughly; meanwhile cut out the side stiffen-

ers (D) and lower fuselage across braces (E) as shown in the plans.

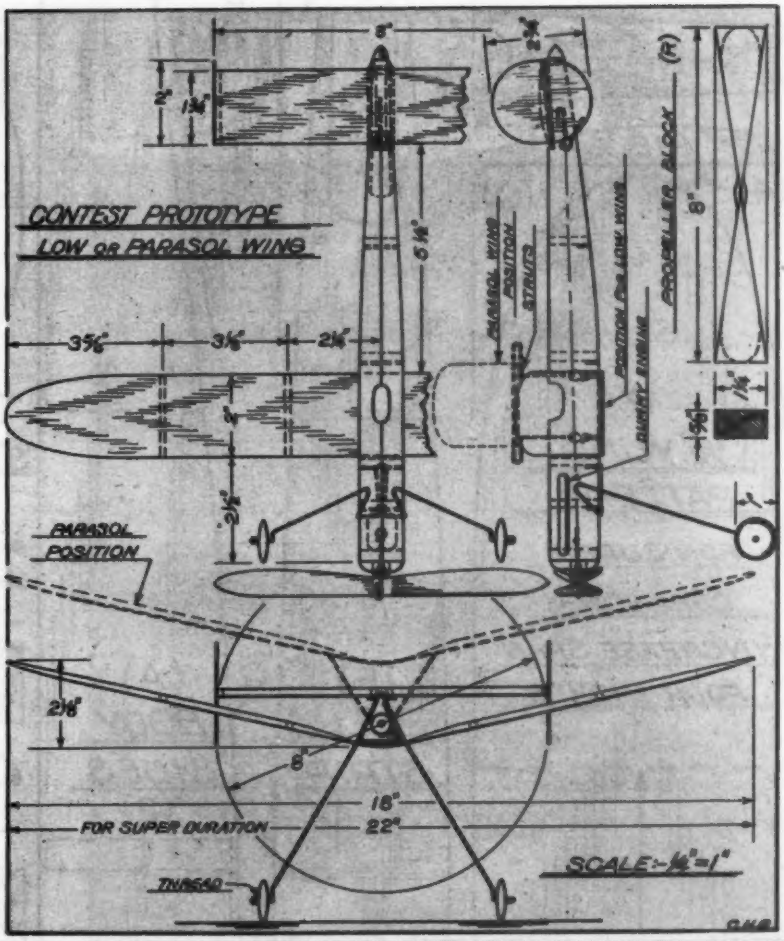
The fuselage belly strip (F) can also be cut out. When the cement of the V joint along the upper edge of the fuselage is dry, cement the side stiffeners (D) to sides of the fuselage at their locations as indicated in the three-view plans. Then cement crosspieces (E) in place, making sure their lower edges are flush with lower edges of the fuselage sides. Use clamps and pins to hold these in place.

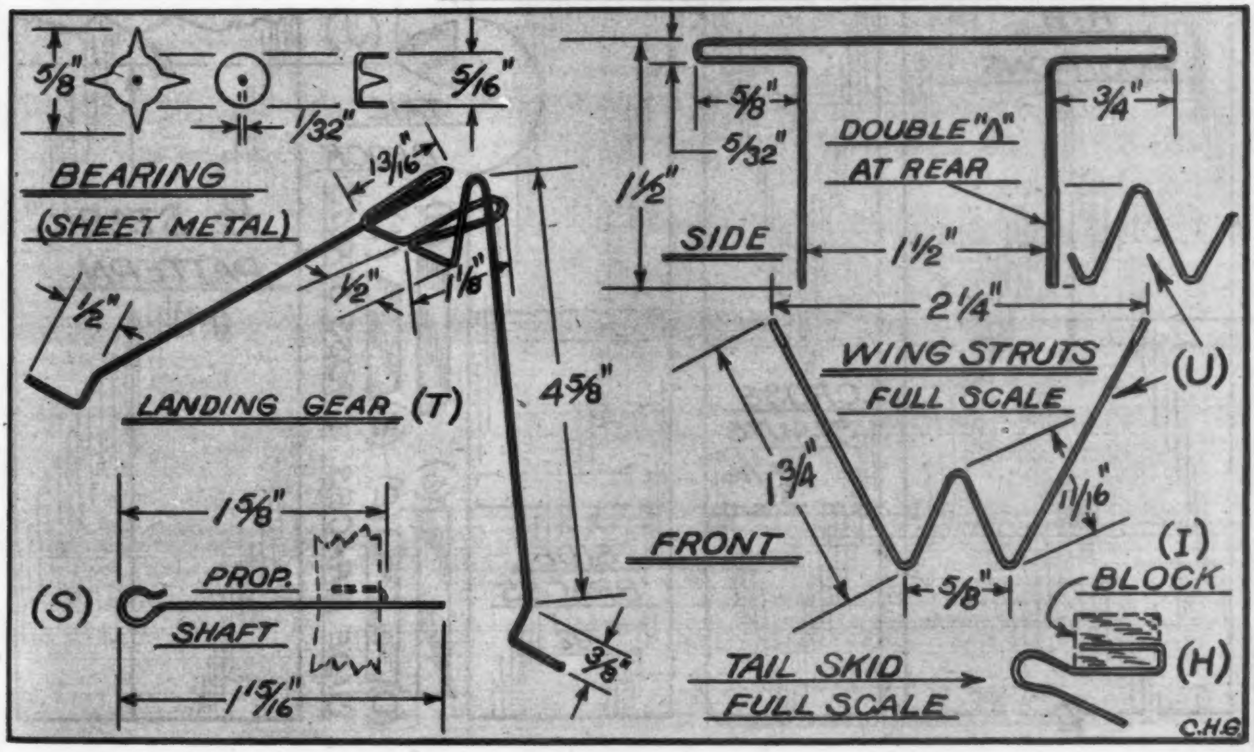
Cut out the rear motor anchor block (G). Bend the rear motor hook and tail skid (H) to correct shape from 1/32" wire and hook it into the rear anchor block as shown in (I). Cover the wire with plenty of cement where it contacts the wood, then cement the whole unit in place in the V of the fuselage about 1-1/4" from the rear (see plans). The bottom of the fuselage now can be cemented in place. Cover the lower edges of the sides, crosspieces, nose and tail block with cement. Press the bottom in place holding it firmly with pins until dry. Meanwhile cut out a small pyramid of balsa for tail block (J) and cement it to tail of the fuselage. This completes its streamline form.

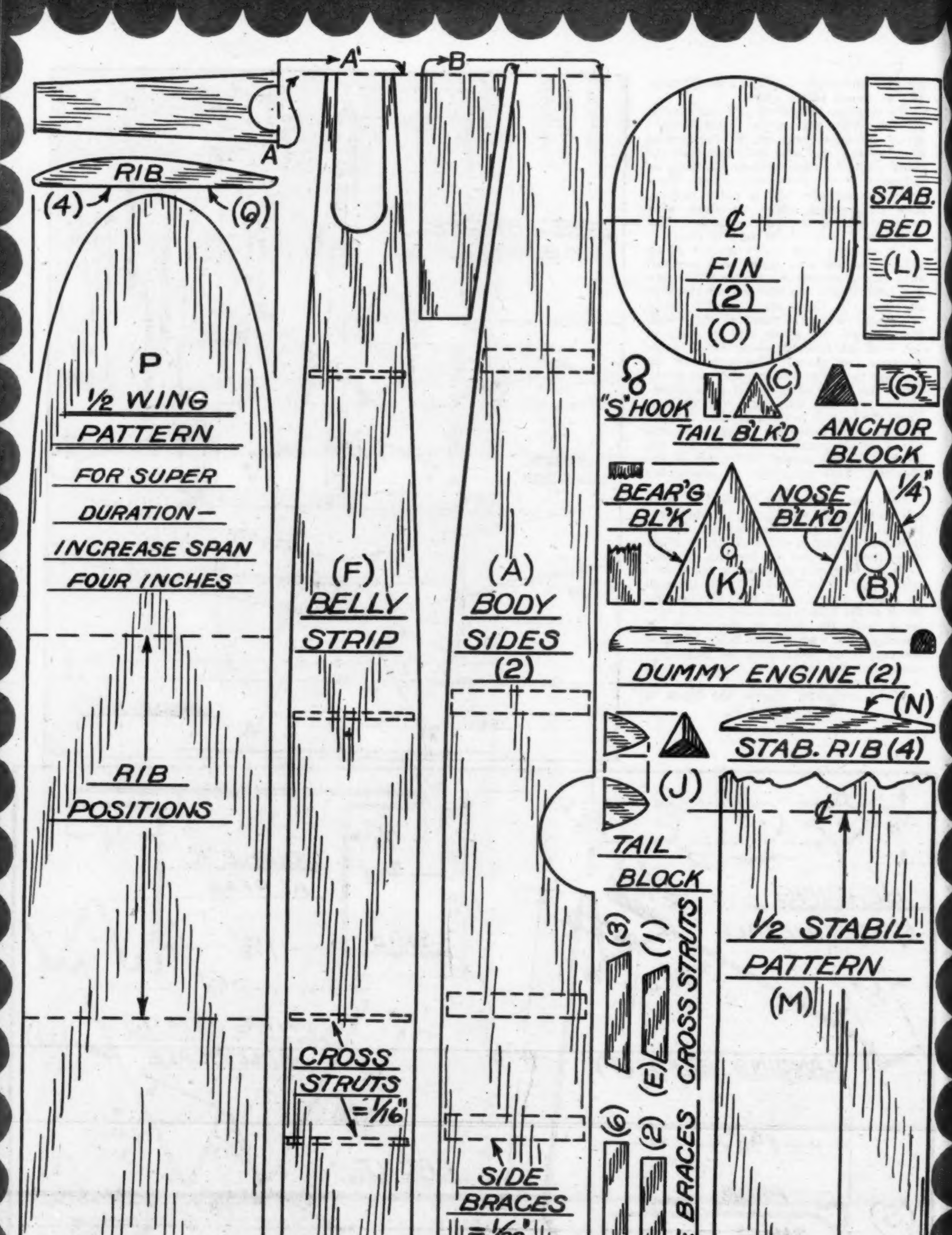
Next cut out bearing block (K) from 1/4" thick balsa with grain running vertically. Drill 1/8" hole through this as indicated. From a piece of tin or other sheet metal cut out the bearing, bending back the four ears as shown in the drawing. Punch or drill a 1/32" hole through its center and press it into the bearing block so the hole in the metal plug is centered with the hole in the block. If necessary cut 4 small slots in the block so the ears of the metal plug can be pushed easily into the balsa. Use cement to hold it in place.

When complete, cement the block to

(*Turn to page 55*)






A'
B
A
RIB
(4)
(Q)
P
1/2 WING
PATTERN
FOR SUPER
DURATION—
INCREASE SPAN
FOUR INCHES
RIB
POSITIONS
℄
(F)
BELLY
STRIP
CROSS
STRUTS
=1/16"
(A)
BODY
SIDES
(2)
SIDE
BRACES
=1/32"
℄
FIN
(2)
(O)
STAB.
BED
(L)
"S" HOOK
(C)
TAIL BLK'D
(G)
ANCHOR
BLOCK
BEAR'G
BL'K
(K)
NOSE
BLK'D
1/4"
(B)
DUMMY ENGINE (2)
(N)
STAB. RIB (4)
(J)
TAIL
BLOCK
(3)
(1)
(E)
CROSS STRUTS
(6)
(2)
(D)
SIDE BRACES
℄
1/2 STABIL.
PATTERN
(M)

Enhance your model with these easily made props

FOUR BLADE PROPS & SPINNERS

by Ray Rusher

FROM time to time we have seen four-blade props in pictures of model planes but specific data on how to make them is still somewhat lacking. Here are two methods that will be found useful and may lead the way to the development of further ideas by the modeler who wants to carve his own. These methods are particularly well adapted to the prop carving method described in the July 1943 issue of this magazine.

Drawings 1 to 4 show a simple arrangement that can be used with a spinner nut as in 5; or a washer and a plain nut as shown by dotted lines can be used instead of the spinner nut. If a large spinner of the type shown in 7 is desired, the blade carving may be started farther from the center as illustrated in 6 and 8. This type of spinner of course is a continuation of the front end of the fuselage to provide for smooth airflow from the nose of the plane and over the prop and fuselage with a minimum of turbulence. Of the two types of four-blade props here described, this is the more efficient.

Referring to drawing 4, a two-blade prop is notched in front at its center and a second two-blade prop is provided with a complementary notch in its back. The two props are then glued together and the result is shown in 1.

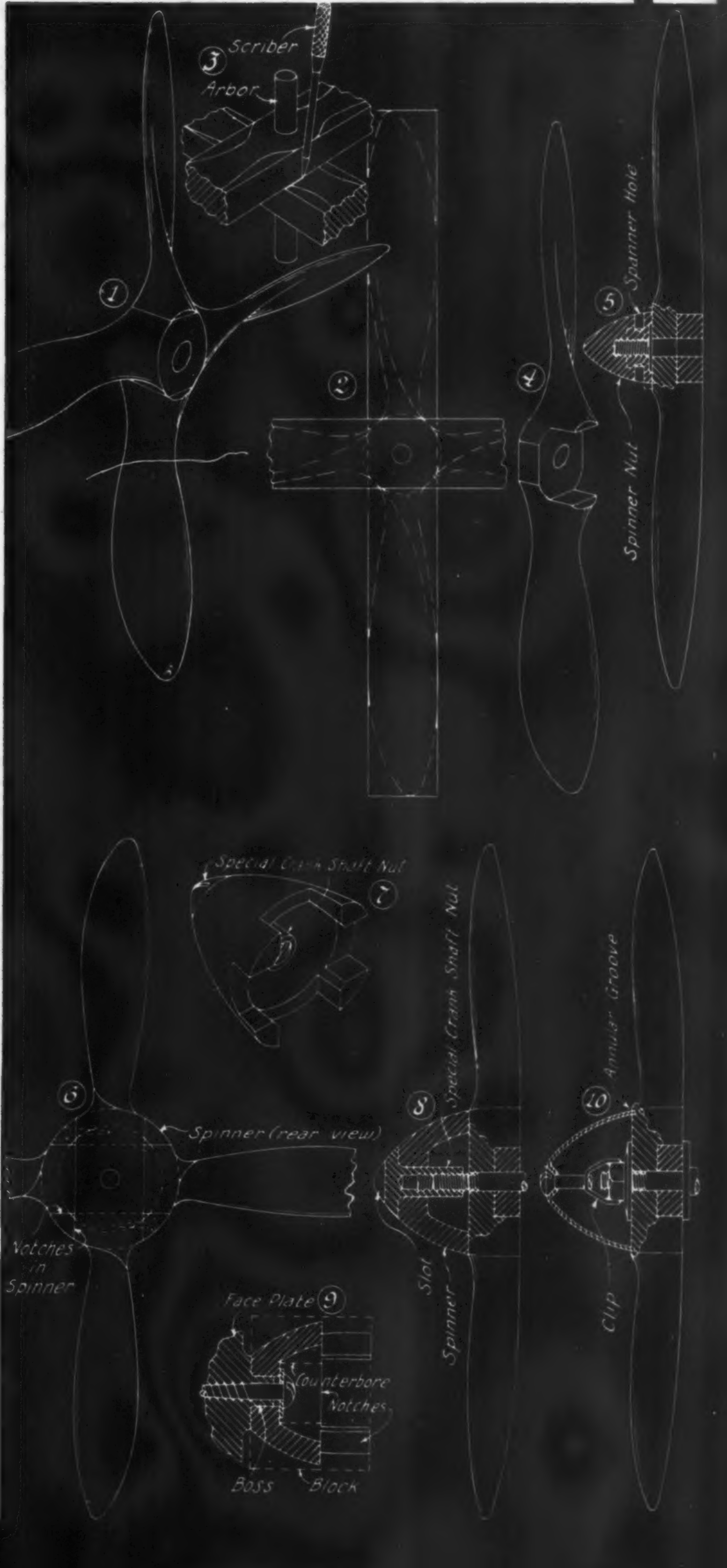
The best method for notching is to thread an arbor through the crankshaft holes of two prop blanks before the blades are carved and cross them as in 3. The blanks may be marked and cross-slotted as described in the above mentioned article either before or after notching. Scribe each prop blank along the sides of the other so that the blades can be notched *just to* the scribed lines to result in a tight fit without sloppiness when the blades are later fitted together. The notches are cut on a circular saw to exactly half the depth of the prop blank.

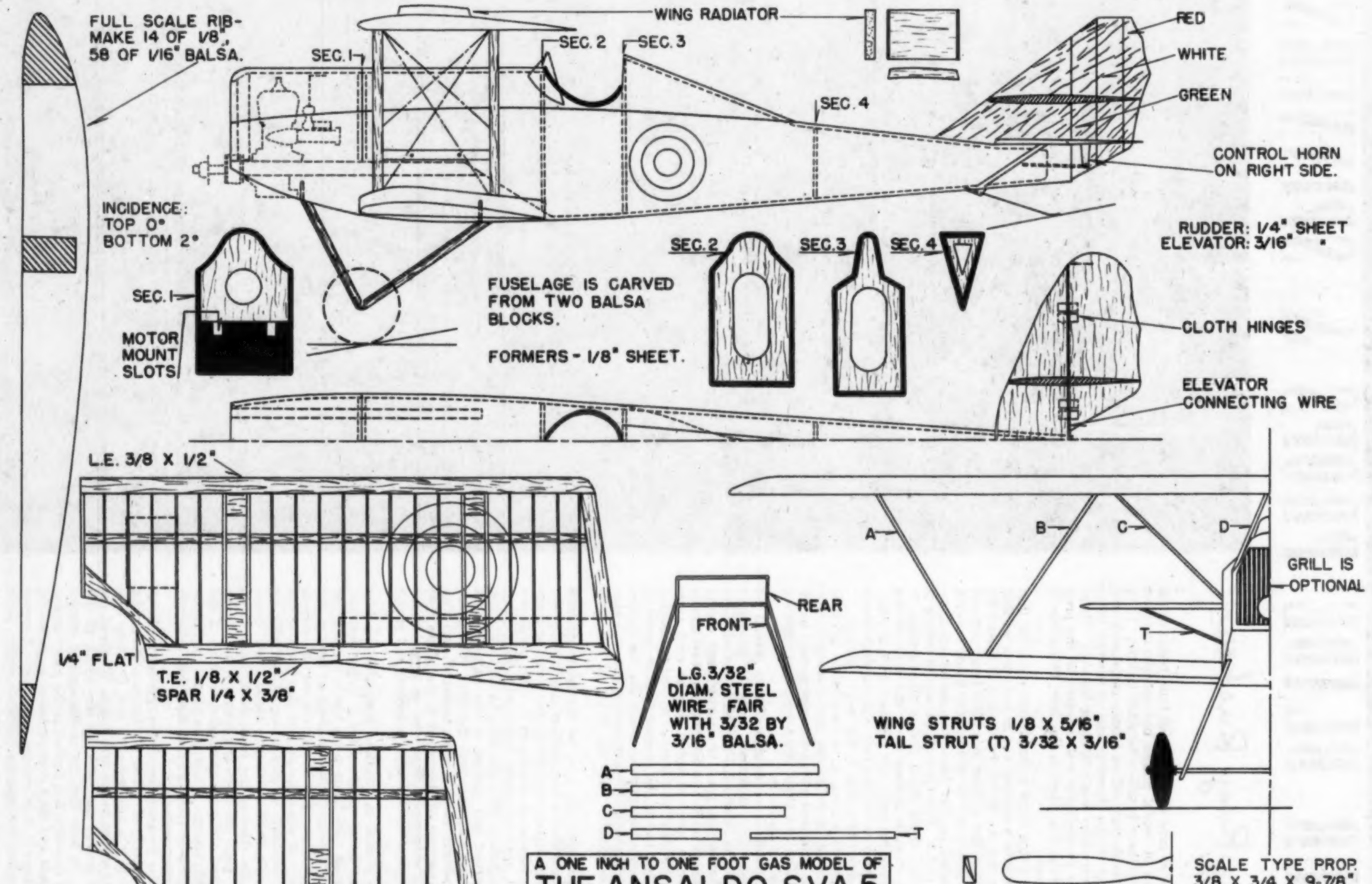
The prop blades can now be carved to desired outline shape with the hub cutting slightly into the corners of the square defined by the crossing parts of the prop blanks as shown in 2. The props are carved and approximately balanced before they are glued together; after the glue has set they can be finish-carved and sanded at the roots so that one blade fairs smoothly into the next. The completed four-blade prop is then balanced and finished with varnish as described in the June 1946 issue of this magazine. This type of prop is particularly adapted for use with a spinner nut of the kind shown in 5.

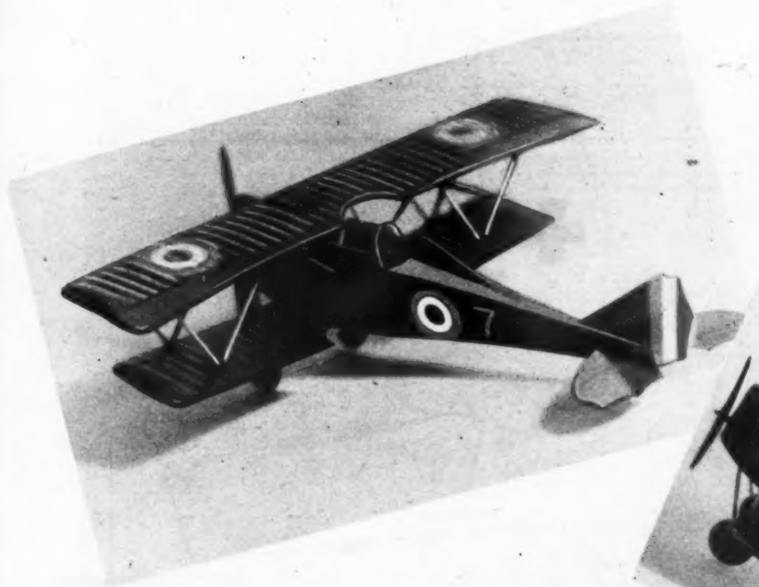
The prop shown in 6 differs from the one just described by being designed for a larger spinner. Note that each two-blade prop has a rectangular crossection at the center about twice as long as the prop blank is wide. The blanks are carved only to the periphery of the spinner and the roots of the blades are rounded to merge smoothly with its surface. Don't finish-carve the blade roots, however, until the spinner has been made and placed in position. Then the sides and fronts of the blanks can be scribed along the sides and bottoms of the notches in the spinner to serve as guides for finish-carving the blade roots so that they fair properly into the spinner surface.

Now for the construction of the spinner itself. A rectangular block of wood of the size shown by dotted lines in 9 is notched on a saw, first one way then at right angles to the first notch. Width of the notch is of course the same as the width of the prop blank. A hole the size of the special crankshaft nut of drawing 8 is drilled at the exact center of the notches and then counterbored as indicated by dotted lines in 9 to receive a washer. A screw serves to mount the spinner block on a face plate

(*Turn to page 52*)




FULL SCALE RIB-
MAKE 14 OF 1/8",
58 OF 1/16" BALSA.
WING RADIATOR
SEC. 1
SEC. 2
SEC. 3
SEC. 4
RED
WHITE
GREEN
CONTROL HORN
ON RIGHT SIDE.
RUDDER: 1/4" SHEET
ELEVATOR: 3/16" "
INCIDENCE:
TOP 0°
BOTTOM 2°
MOTOR
MOUNT
SLOTS
FUSELAGE IS CARVED
FROM TWO BALSA
BLOCKS.
FORMERS - 1/8" SHEET.
CLOTH HINGES
ELEVATOR
CONNECTING WIRE
L.E. 3/8 X 1/2"
1/4" FLAT
T.E. 1/8 X 1/2"
SPAR 1/4 X 3/8"
REAR
FRONT
L.G. 3/32"
DIAM. STEEL
WIRE. FAIR
WITH 3/32 BY
3/16" BALSA.
A
B
C
D
T
GRILL IS
OPTIONAL
WING STRUTS 1/8 X 5/16"
TAIL STRUT (T) 3/32 X 3/16"
SCALE TYPE PROP.
3/8 X 3/4 X 9-7/8"
A ONE INCH TO ONE FOOT GAS MODEL OF
THE ANSALDO S.V.A.5
DES. BY: Joseph H. Wherry
SCALE 0 1 2 3 4 5 6 INCHES



by Joseph H. Wherry

Here is something different in control liners, a world war I biplane —

ANSALDO SVA-5

HERE is a gas model a bit out of the ordinary for several reasons. First, it is one of those swell flying and stunting scale jobs of the First World War; then it's one of the few which has a cowling that will completely (or nearly so) enclose your motor. The author found the Italian Ansaldo SVA5 Fighter to be a model that is easy to build, that flies as sweetly as you could wish, and that will stunt with the best of them. The model in the accompanying photograph was built around the *Elf* single. However, due to the fact that the majority of modelers utilize a motor mounted by means other than the radial method, the plans are so drawn that any Class A or B engine may be used.

The author has long enjoyed building models that are a bit off the beaten path. The Ansaldo SVA5 was probably the most popular fighter type of the Italian Royal Air Force of World War I. While its use was confined to the fighting between the Italians and Austrians, it did show excellent performance with a top speed of 140 mph, a landing speed of 45 mph, and the ability to climb to 20,000 ft. in 30 minutes. The motor was a 220 hp *SIA*. Smoothly finished with several coats of shiny olive drab dope and decorated with the red, white, and green cocarde of the more cooperative Italy of the first big scramble, this is a model you can really be proud of.

Due to restricted space, the plans are presented one-quarter size; therefore, first of all, with the aid of dividers and the scale shown enlarge the plans to full size. Note the unusual triangular shape of the fuselage aft portion.

Fuselage —Select two medium grade balsa blocks of correct size. Cement these together and carve fuselage. Check the crossections given, also the nose as shown in front view. When carved and sanded, split the two blocks apart, and with proper tools hollow to thickness shown by the dash lines in top and side view. Note that the forward part of the fuselage bottom is left rather heavy for extra strength and to accommodate the 5/16" by 3/8" motor mounts which are of hardwood. Cut notches to provide for these mounts. Cement mounts firmly in place, sparing neither glue nor care.

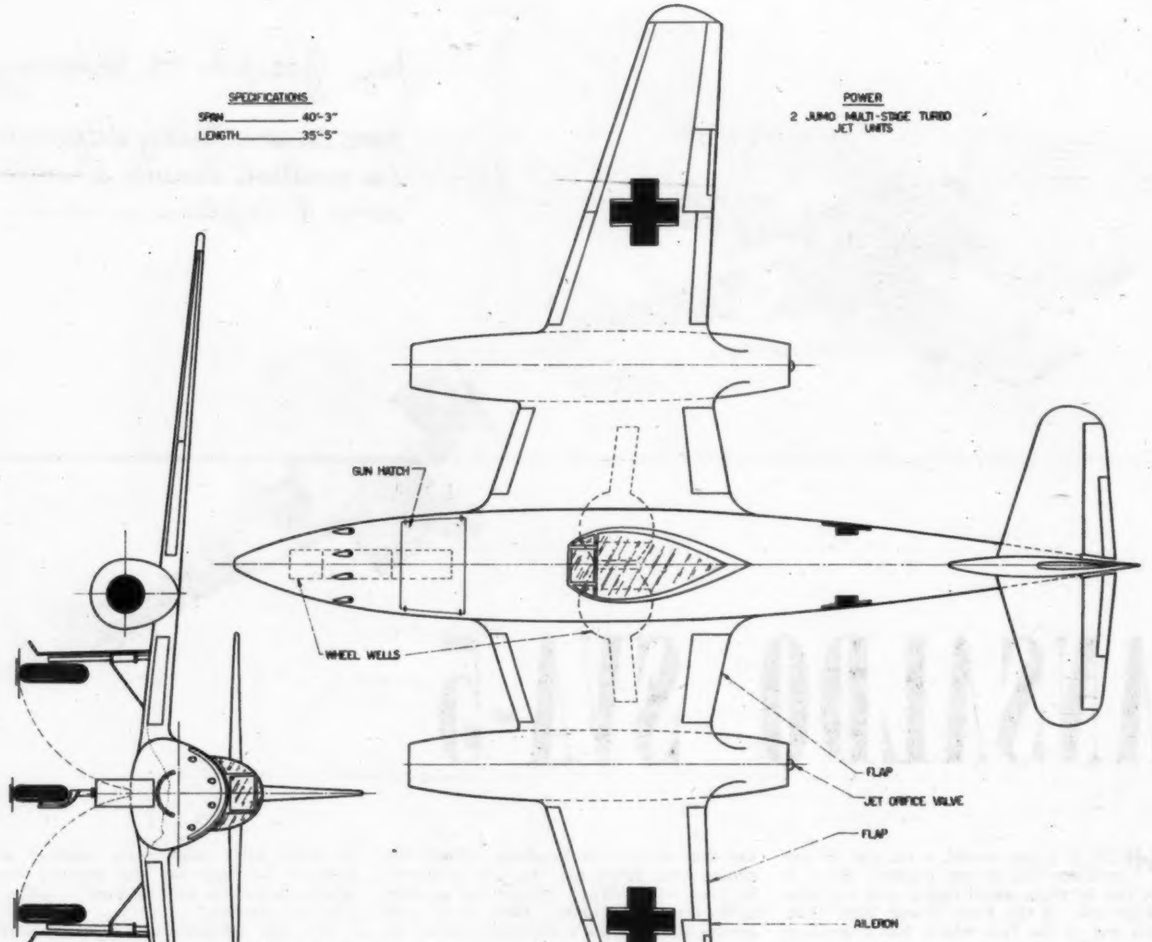
Now cut the reinforcing bulkheads of 1/8" balsa veneer; cement all the bulkheads in their proper places. The author suggests that for the time being you lay aside the left half of fuselage. The bulkheads, control horn, ignition system, etc., is best installed in the right half. Cut the portion of the cowl away from each half that lies above the motor mounts and forward of No. 1 bulkhead. An additional bulkhead is best added at Sec. 1 at this point; this will provide a good seat for the removable cowl. As most flying will be done with the cowl off, we lay the two cowl halves aside now until final assembly. A portion of the bottom of each fuselage half must now be cut away to allow for the motor crankcase; the size of this cutout will, of course, vary with the type of motor used. When all internal units have been secured, and this includes the control rod of 1/16" diameter music wire which protrudes at rear from the right side, we are ready to cement the sides together. Here again, don't spare the cement.

The author prefers to finish the various component parts before assembly. The fuselage is now thoroughly sanded with the finest sandpaper. Three or four coats of wood fillêr with more sanding will prepare fuselage for the colored dope which should be well thinned in order to flow on smoothly.

The tail surfaces are now prepared. Note that the plans call for the grain of the rudder to run diagonally. The wisdom of this will be apparent when you stop to consider how easily a well streamlined rudder can warp. 1/4" sheet is used for the rudder, and 3/16" sheet balsa for the elevators and horizontal stabilizer, the latter being made in one piece. Streamline the tail surfaces and finish as you did the fuselage. Note that a length of music wire is used to connect the two elevators. The usual hinges of silk are cemented in place. Cement the stabilizer in place on fuselage, cement the elevator horn in place on bottom side of the right elevator; connect the control rod to horn; lastly, at this point provide and cement the elevator struts (T) in place. Notch the rudder so the wire connecting elevators can move freely, and cement rudder in place. 1/8" rubber tubing which has been split open can now be cemented around cockpit opening to form the usual scanty upholstering of the old time ships. With the addition of a celluloid wind screen, we have accomplished the most difficult part of our enterprise.

Now obtain a lengthy piece of 3/32" landing gear wire. With a pair of sharp nose pliers, bend the landing gear to shape. This is not as difficult as it might appear if you begin with the center of the rear portion of the landing gear. Cut slots across the fuselage bottom and cement landing gear firmly in these slots. The slots can be closed up with a mixture of balsa sawdust and cement. Now

(Turn to page 91)

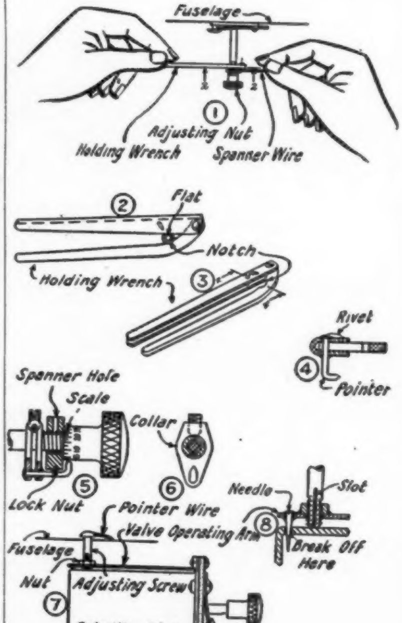

SPECIFICATIONS
SPAN 40'-3"
LENGTH 35'-5"
POWER
2 JUMO MULTI-STAGE TURBO JET UNITS
GUN HATCH
WHEEL WELLS
FLAP
JET ORIFICE VALVE
FLAP
AILERON
TRIM TAB
4-30mm. MK-108 CANNON
GUN HATCH
SHELL EJECTION SLOTS
FUEL TANK
ARMOR PLATE
ARMOR PLATE
FUEL TANK
LIGHT GREEN-BROWN
SKY BLUE
ONLY RIGHT HAND JET IS SHOWN IN THIS VIEW FOR CLARITY.
0 1 2 3 4 5
SCALE
ME-262
SCHWALBE (Swallow)
FIGHTER - BOMBER

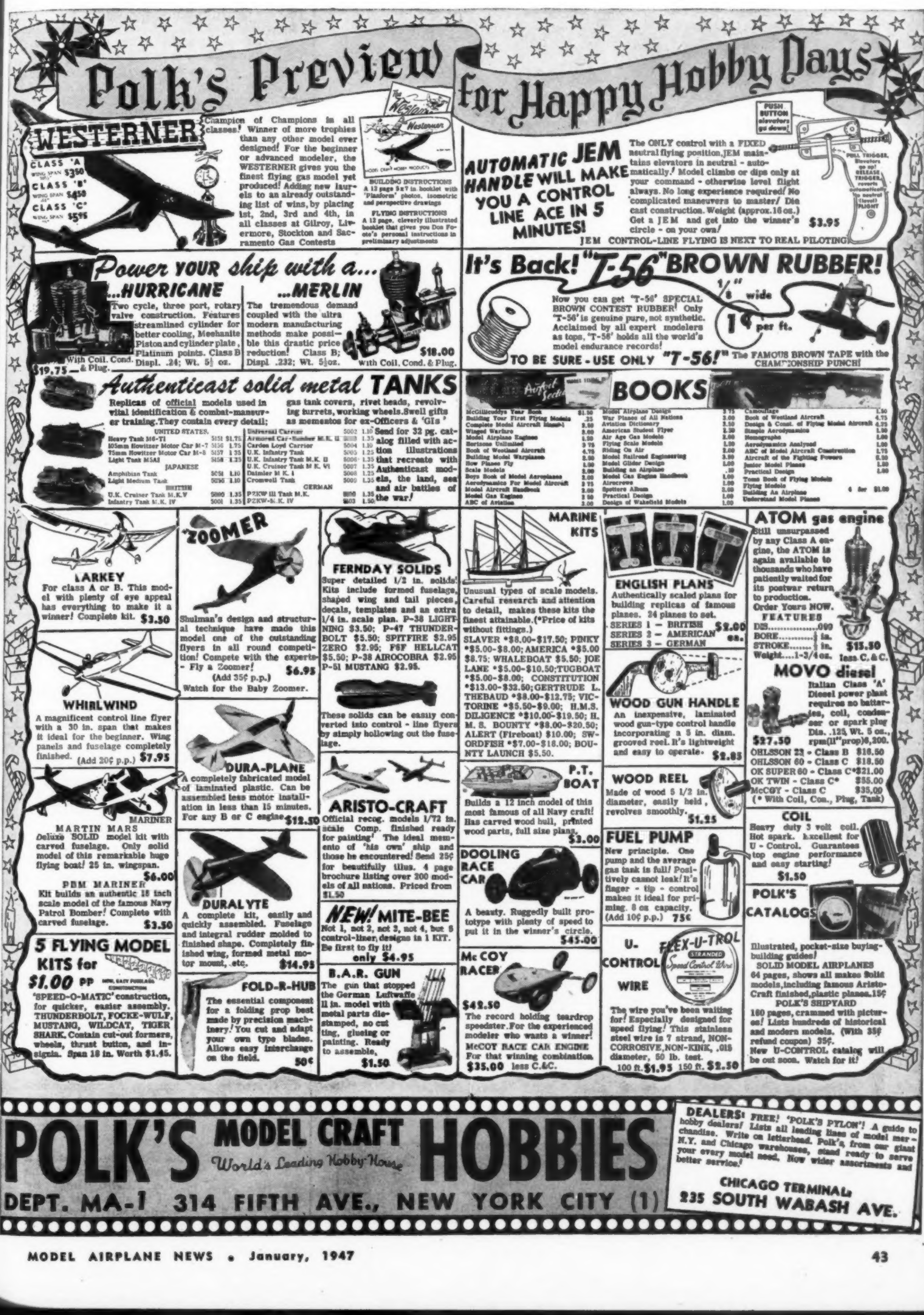
ADJUSTMENT FOR AUSTIN TIMER

By Ray Rusher

THE *Austin* and similar air timers have been found by many modelers to be a satisfactory and reliable means to time the engine of both free flight and U-Control planes, model cars and boats, as well as for timing retractable landing gears, flaps, etc. They have one serious disadvantage, however. The timing is adjustable but it is a matter of "adjust and try" because there is no scale to show just how much adjustment has been given to the timer and this is a long and sometimes exasperating procedure. Here are presented ways to overcome this disadvantage.

One method is to provide a holding wrench for the piston rod and a numbered scale on the adjusting nut as shown in drawings 1, 2, 3 and 4. The holding wrench has a pointer adapted to act in conjunction with the scale to indicate the direction and degree of adjustment. The scale can be arbitrarily graduated, preferably in approximate seconds, although you will find it rather difficult to graduate it accurately as timing varies somewhat with temperature and humidity. Drawing 5 shows graduations from 5 to 35 seconds within about 120° of rotation of the ad-




Polk's Preview for Happy Hobby Days
WESTERNER
CLASS 'A' WING SPAN $3.50
CLASS 'B' WING SPAN $4.50
CLASS 'C' WING SPAN $5.95
Champion of Champions in all classes! Winner of more trophies than any other model ever designed! For the beginner or advanced modeler, the WESTERNER gives you the finest flying gas model yet produced! Adding new laurels to an already outstanding list of wins, by placing 1st, 2nd, 3rd and 4th, in all classes at Gilroy, Livermore, Stockton and Sacramento Gas Contests
BUILDING INSTRUCTIONS A 12 page 5x7 in. booklet with 'Plasform' photos, isometric and perspective drawings
FLYING INSTRUCTIONS A 12 page, cleverly illustrated booklet that gives you Don Foote's personal instructions in preliminary adjustments
AUTOMATIC JEM HANDLE WILL MAKE YOU A CONTROL LINE ACE IN 5 MINUTES!
The ONLY control with a FIXED neutral flying position. JEM maintains elevators in neutral - automatically! Model climbs or dips only at your command - otherwise level flight always. No long experience required! No complicated maneuvers to master! Die cast construction. Weight (approx. 16 oz.) Get a JEM and get into the winner's circle - on your own! $3.95
PUSH BUTTON elevators go down!
PULL TRIGGER. Elevators go up! RELEASE TRIGGER. reverts automatically to neutral (level) FLIGHT
JEM CONTROL-LINE FLYING IS NEXT TO REAL PILOTING!
Power your ship with a...
...HURRICANE
Two cycle, three port, rotary valve construction. Features streamlined cylinder for better cooling, Meehanite Piston and cylinder plate, Platinum points. Class B Displ. .24; Wt. 5½ oz.
$19.75 — With Coil. Cond. & Plug.
...MERLIN
The tremendous demand coupled with the ultra modern manufacturing methods make possible this drastic price reduction! Class B; Displ .232; Wt. 5½oz.
$18.00 With Coil, Cond. & Plug.
It's Back! "T-56" BROWN RUBBER!
1/8" wide 1¢ per ft.
Now you can get 'T-56' SPECIAL BROWN CONTEST RUBBER! Only 'T-56' is genuine pure, not synthetic. Acclaimed by all expert modelers as tops, 'T-56' holds all the world's model endurance records!
TO BE SURE - USE ONLY "T-56!" The FAMOUS BROWN TAPE with the CHAMPIONSHIP PUNCH!
Authenticast solid metal TANKS
Replicas of official models used in vital identification & combat-maneuver training. They contain every detail; gas tank covers, rivet heads, revolving turrets, working wheels. Swell gifts as mementos for ex-Officers & 'GIs'
UNITED STATES
Heavy Tank M6-T1 5151 $1.75
105mm Howitzer Motor Car M-7 5156 1.75
75mm Howitzer Motor Car M-8 5157 1.35
Light Tank M5A1 5158 1.35
JAPANESE
Amphibian Tank 5C51 1.10
Light Medium Tank 1.10
BRITISH
U.K. Cruiser Tank M.K.V 1.35
Infantry Tank M.K. IV 5001 1.35
Universal Carrier 5002 1.10
Armored Car-Humber M.K. II 1.35
Carden Loyd Carrier 5004 1.10
U.K. Infantry Tank 5005 1.25
U.K. Infantry Tank M.K. II 5006 1.35
U.K. Cruiser Tank M.K. VI 5007 1.35
Daimler M.K. I 5008 1.25
Cromwell Tank 5009 1.35
GERMAN
PZKW III Tank M.K. 1.35
PZKW-M.K. IV 1.50
Send for 32 pg. catalog filled with action illustrations that recreate with Authenticast models, the land, sea and air battles of the war!
BOOKS
McGillicuddys Year Book $1.50
Building Your First Flying Models .25
Complete Model Aircraft Manual
Winged Warfare
Model Airplane Engines
Horizons Unlimited
Book of Westland Aircraft
Building Model Warplanes
How Planes Fly
Scale Models
Boys Book of Model Aeroplanes
Aerodynamics For Model Aircraft
Model Aircraft Handbook
Model Gas Engines
ABC of Aviation
Model Airplane Design
War Planes of All Nations
Aviation Dictionary
American Student Flyer
Air Age Gas Models
Flying Scale Models
Riding On Air
Model Railroad Engineering
Model Glider Design
Building an Airplane
Model Gas Engine Handbook
Aircrews
Spotters Album
Practical Design
Design of Wakefield Models
Camouflage
Book of Westland Aircraft
Design & Const. of Flying Model Aircraft
Simple Aerodynamics
Monographs
Aerodynamics Analyzed
ABC of Model Aircraft Construction
Aircraft of the Fighting Powers
Junior Model Planes
Practical Design
Teens Book of Flying Models
Flying Models
Building An Airplane
Understand Model Planes
4 for $1.00
LARKEY
For class A or B. This model with plenty of eye appeal has everything to make it a winner! Complete kit. $3.50
WHIRLWIND
A magnificent control line flyer with a 30 in. span that makes it ideal for the beginner. Wing panels and fuselage completely finished. (Add 20¢ p.p.) $7.95
MARTIN MARS MARINER
Deluxe SOLID model kit with carved fuselage. Only solid model of this remarkable huge flying boat! 25 in. wingspan. $6.00
PBM MARINER
Kit builds an authentic 18 inch scale model of the famous Navy Patrol Bomber! Complete with carved fuselage. $3.50
5 FLYING MODEL KITS for $1.00 PP
'SPEED-O-MATIC' construction, for quicker, easier assembly. THUNDERBOLT, FOCKE-WULF, MUSTANG, WILDCAT, TIGER SHARK. Contain cut-out formers, wheels, thrust button, and insignia. Span 18 in. Worth $1.45.
"ZOOMER"
Shulman's design and structural technique have made this model one of the outstanding flyers in all round competition! Compete with the experts - Fly a Zoomer! $6.95
(Add 35¢ p.p.)
Watch for the Baby Zoomer.
DURA-PLANE
A completely fabricated model of laminated plastic. Can be assembled less motor installation in less than 15 minutes. For any B or C engine $12.50
DURALYTE
A complete kit, easily and quickly assembled. Fuselage and integral rudder molded to finished shape. Completely finished wing, formed metal motor mount, etc. $14.95
FOLD-R-HUB
The essential component for a folding prop best made by precision machinery! You cut and adapt your own type blades. Allows easy interchange on the field. 50¢
FERNDAY SOLIDS
Super detailed 1/2 in. solids! Kits include formed fuselage, shaped wing and tail pieces, decals, templates and an extra 1/4 in. scale plan. P-38 LIGHTNING $3.50; P-47 THUNDERBOLT $5.50; SPITFIRE $2.95 ZERO $2.95; F6F HELLCAT $5.50; P-39 AIROCOBRA $2.95 P-51 MUSTANG $2.95.
These solids can be easily converted into control - line flyers by simply hollowing out the fuselage.
ARISTO-CRAFT
Official recog. models 1/72 in. scale Comp. finished ready for painting! The ideal memento of 'his own' ship and those he encountered! Send 25¢ for beautifully illus. 4 page brochure listing over 200 models of all nations. Priced from $1.50
NEW! MITE-BEE
Not 1, not 2, not 3, not 4, but 5 control-liner designs in 1 KIT. Be first to fly it! only $4.95
B.A.R. GUN
The gun that stopped the German Luftwaffe 11 in. model with metal parts diestamped, no cutting, glueing or painting. Ready to assemble. $1.50
MARINE KITS
Unusual types of scale models. Careful research and attention to detail, makes these kits the finest attainable. (*Price of kits without fittings.)
SLAVER *$8.00-$17.50; PINKY *$5.00-$8.00; AMERICA *$5.00 $8.75; WHALEBOAT $5.50; JOE LANE *$5.00-$10.50; TUGBOAT *$5.00-$8.00; CONSTITUTION *$13.00-$32.50; GERTRUDE L. THEBAUD *$8.00-$12.75; VICTORINE *$5.50-$9.00; H.M.S. DILIGENCE *$10.00-$19.50; H. M. S. BOUNTY *$8.00-$20.50; ALERT (Fireboat) $10.00; SWORDFISH *$7.00-$18.00; BOUNTY LAUNCH $5.50.
P.T. BOAT
Builds a 12 inch model of this most famous of all Navy craft! Has carved wood hull, printed wood parts, full size plans. $3.00
DOOLING RACE CAR
A beauty. Ruggedly built prototype with plenty of speed to put it in the winner's circle. $45.00
McCOY RACER
$42.50
The record holding teardrop speedster. For the experienced modeler who wants a winner! McCOY RACE CAR ENGINE For that winning combination $35.00 less C.&C.
ENGLISH PLANS
Authentically scaled plans for building replicas of famous planes. 24 planes to set.
SERIES 1 — BRITISH
SERIES 2 — AMERICAN $2.00 ea.
SERIES 3 — GERMAN
WOOD GUN HANDLE
An inexpensive, laminated wood gun-type control handle incorporating a 5 in. diam. grooved reel. It's lightweight and easy to operate. $2.85
WOOD REEL
Made of wood 5 1/2 in. diameter, easily held, revolves smoothly. $1.25
FUEL PUMP
New principle. One pump and the average gas tank is full! Positively cannot leak! It's finger - tip - control makes it ideal for priming. 8 oz capacity. (Add 10¢ p.p.) 75¢
U-CONTROL WIRE
FLEX-U-TROL STRANDED Speed Control Wire
The wire you've been waiting for! Especially designed for speed flying! This stainless steel wire is 7 strand, NON-CORROSIVE, NON-KINK, .015 diameter, 50 lb. test. 100 ft. $1.95 150 ft. $2.50
ATOM gas engine
Still unsurpassed by any Class A engine, the ATOM is again available to thousands who have patiently waited for its postwar return to production. Order Yours NOW.
FEATURES
DIS. .099
BORE ½ in.
STROKE ½ in.
Weight 1-3/4 oz.
$15.50 less C. & C.
MOVO diesel
Italian Class 'A' Diesel power plant requires no batteries, coil, condenser or spark plug Dis. .125 Wt. 5 oz., rpm(11" prop)6,300.
$27.50
OHLSSON 23 - Class B $16.50
OHLSSON 60 - Class C $18.50
OK SUPER 60 - Class C* $21.00
OK TWIN - Class C* $35.00
McCOY - Class C $35.00
(* With Coil, Con., Plug, Tank)
COIL
Heavy duty 3 volt coil. Hot spark. Excellent for U - Control. Guarantees top engine performance and easy starting! $1.50
POLK'S CATALOGS
Illustrated, pocket-size buying-building guides!
SOLID MODEL AIRPLANES 64 pages, shows all makes Solid models, including famous Aristo-Craft finished, plastic planes. 15¢
POLK'S SHIPYARD 160 pages, crammed with pictures! Lists hundreds of historical and modern models. (With 35¢ refund coupon) 35¢.
New U-CONTROL catalog will be out soon. Watch for it!
POLK'S MODEL CRAFT HOBBIES
World's Leading Hobby House
DEPT. MA-1 314 FIFTH AVE., NEW YORK CITY (1)
DEALERS! FREE! 'POLK'S PYLON'! A guide to hobby dealers! Lists all leading lines of model merchandise. Write on letterhead. Polk's, from our giant N.Y. and Chicago warehouses, stand ready to serve your every model need. Now wider assortments and better service!
CHICAGO TERMINAL, 235 SOUTH WABASH AVE.

justing nut, this being the timing for one particular timer but is probably different for other timers as they vary somewhat in their operating characteristics.

Drawing 2 shows how the wrench has its straight arm engaging the flat side of the piston rod and how the curved arm has a 1/16" radius notch to fit the round side of the rod. This insures that the piston rod is gripped in only one position so that the pointer is always in a predetermined position relative to the rod. The wrench is used to hold the piston rod while turning the adjusting nut and while tightening the lock nut for the adjusting nut. After adjustment is made the lock nut is tightened to retain the adjustment.

The straight arm of the wrench is made of a piece of tin plate about .015° thick bent to channel shape as shown in drawing 4, and the curved arm is cut from sheet iron 1/16" thick. The arms are pivoted together by means of a countersunk rivet with the riveted end on the side opposite that from which the pointer projects. The pointer is a piece of 1/32" piano wire soldered into the flanges of the straight arm. A convenient way to turn the lock nut is to drill two or three 1/32" spanner holes in it and use a 1" length of 1/32" piano wire as a spanner lever (as shown in drawing 1) to loosen the lock nut before adjustment and to tighten it after adjustment.

Another modification consists of providing a pointer secured to the piston rod. The pointer is soldered to a collar shown in drawings 5 and 6, the collar being a strip of 1/32" brass bent U-shape and having 1/8" holes drilled in its flanges. A hole is drilled in the bend of the U with a 3/64" or No. 56 drill and tapped to receive a No. 0-80 set screw. The set screw can be made from a bolt and should be pointed so that it seats in a depression about 1/64" deep in the piston rod and made with the point of the No. 56 drill. The position of the depression should be carefully selected as the adjusting and lock nuts have only one limited position where the desirable timing in the range of 15 to 20 seconds occurs. The holding wrench can still be used to hold the piston rod against rotation when turning the adjusting and lock nuts but it needs no pointer as the collar just described serves to mount a pointer permanently on the piston rod. This method adds a slight amount of weight to the timer over the method first described.

A third way is to eliminate the use of the present adjusting device (which is in the form of a needle valve, the needle being secured to the adjusting nut). This is done by removing the lock nut and turning the adjusting nut down as tight as it will go. The timing will then be about 10 minutes. Upon drilling a No. 80 hole (.0135" diameter) about 1/16" from the inner end of the cylinder as in drawing 8, the timing period will decrease to about 2 seconds. By now thrusting a needle of about .020" diameter into the hole and oscillating it a few times to burnish the hole and make the needle fit tight, the timing will again be 10 minutes. Obviously the timing period can now be shortened by providing a micrometer adjusting means for retracting the needle from the hole and the degree of retraction will determine the length of the timing period.

Before drilling the No. 80 hole, mount a 1/4" strip of tin or spring brass on the Bakelite disk of the Austin timer by means of a small bolt as shown in drawings 7 and 9 to serve as a valve operating arm. The strip has a foot bent at about

85° for mounting and the strip is tight against the upper edge of the cylinder attaching flange to prevent turning of the foot on the bolt. The 85° angle causes the free end of the strip to bear against the timer cylinder.

Now drill a No. 80 hole through the free end of the strip and through the wall of the cylinder, and with a No. 56 drill enlarge the hole in the strip. The needle can then be thrust through the No. 56 hole and into the No. 80 hole and the latter hole burnished as described above. Also drill a 7/64" hole 3/16" from the No. 56 hole to receive a No. 3-56 screw and solder a nut for the screw over the hole, being careful not to get solder into the threads of the nut. This is best done by having the screw in the nut while soldering but blacken the screw with smoke from a lighted match to prevent the solder from sticking to the threads. About 1/8" of the needle point is broken off and pushed tightly into the No. 80 hole as in drawing 8. It will have a loose fit in the No. 56 hole of the valve operating arm.

With the arm held 1/32" away from the cylinder by means of cardboard or paper, solder the needle to the arm with one drop of solder, being careful not to heat the arm sufficiently to soften the solder that holds the nut to it. This procedure will insure that the needle is accurately centered in the No. 80 hole and can be retracted without binding against the edge of the hole. About 1/32" of the needle point can be broken off before soldering it to the arm so that it doesn't project so far into the cylinder. The broken inner end should then be rounded on a hone to prevent a ragged edge from marring the No. 80 hole.

By inserting an adjusting screw into the nut and rotating it until it engages the cylinder, the screw can be used to retract the needle to the required degree for the timing interval desired. It will be found that 1/4 turn of the adjusting screw after contact with the cylinder has been made (indicated as X on the scale in drawing 10) reduces the timing from 10 minutes to 120 seconds, and that in the next 1/2 turn the timing is progressively reduced to about 5 seconds. Accordingly a pointer wire can be soldered into the slot of the screw head and a dial drawn on the fuselage to indicate various timer settings. The author found that a 180° dial divided into 8 equal parts resulted in the seconds of timing applied to drawing 10, the desired range of 10 to 45 seconds covering a 90° spread. The divisions of the dial can be unequal of course and marked in seconds, degrees or any units desired.

The form of timer adjusting means shown in drawings 7, 8, 9 and 10 is preferable over the first two described as the timer can be entirely enclosed in the fuselage with only the head of the adjusting screw and its pointer wire projecting to the outside where it is instantly available for adjustment. The timer can be set by a string tied to the adjusting nut and passing through a hole in the tail or side of the fuselage.

If you have a removable engine-ignition-timer unit that slides into the nose of the fuselage, the adjusting screw can readily be removed from installed position before removing the unit and replaced after you slide the unit back into the fuselage. The adjusting screw should be a tight fit in its nut to prevent vibration from causing the adjustment to shift or the screw to become lost. This is best done by slotting about 1/8" of the screw with a fine jeweler's hacksaw and

spreading the two halves of the screw to increase the friction of its threads in those of the nut. Drawing 8 shows the result.

Lost play in the theads is fully taken up by the tendency of the valve operating arm to force the needle into the No. 80 hole and the arm serves as a return spring when the screw is unscrewed in the nut, thus assuring the same relation of parts each time the pointer wire is returned to a given setting. The result is an accuracy of timing not possible with other adjusting methods.

Newsletter

(*Continued from page* 6)

so the full scale activity could play to a big audience.

That is pretty much what happened last summer in several instances and in different parts of the country. One of the first complaints heard came from model flyers in the midwest area. There, while official flying was going on and models were in the air, a squadron of low flying P-51 fighters came booming across the model field with props clearing the ground (and modelers) by not more than 15 feet.

Investigation showed that the meet had been held up on two occasions when the pursuits were scheduled to "fly past", but somehow the timing was off and the aircraft appeared when model flying was underway. This was a good example of how such schedules can go wrong and provided plenty of food for thought.

One individual devoting thought to the problem of models and full size aircraft and how poorly they mix was Tom Wardlaw Jr. of Kansas City, Mo. Mr. Wardlaw is a model builder of many years experience and understands quite well the full scale size of the picture inasmuch as he is a first-pilot for TWA piloting DC-3's on the Kansas City-Washington, D.C. run.

The dangerous aspect of full size planes appearing over a model meet with small craft in the air bothered Mr. Wardlaw so he decided to devote his efforts to publicizing the need for better regulated meets as far as full size aircraft were concerned. In addition, Tom was vitally interested in seeing more safety practices accepted on a wide basis by modelers in competition flying. As a result of his labors, Mr. Wardlaw now heads up the A.M.A. Safety Committee and has made a number of important suggestions to the Academy contest board to be included in the 1947 model flying regulations.

In a memo to the contest committee he stated:

"During the coming 1947 competition season, the Safety Committee of the Academy, recognizing the desirability in certain instances of combining air shows and model meets, makes the following recommendations—

"1. There shall be at least 4 hours of model flying for each one-half hour of fullscale flying.

"2. Fullscale flying must begin no earlier than the announced time, nor continue after the designated closing period *regardless* of how late the fullscale activity may be in starting.

"3. All contestants shall be informed when they sign entry blanks that fullscale activity is to be held and the hour for same; this same information shall be posted conspicuously at registration table(s) on day of meet.

"4. No flying models are to be in the air while fullscale activity is in progress. Failure to abide by this will result in revocation of modeler's flying license.

"5. It is recommended that fullscale activity be conducted after close of meet and while model results are being tabulated. Such full scale flying and demonstrations shall be in accordance with prescribed regulations of the Civil Aeronautics Administration and the Joint Aeronautical Show Council.

"6. Failure of contest director to abide by foregoing rules shall result in revocation of his directorship."

It is easy to see that the Safety Committee means business and is deeply con-

cerned over the safety of contestants, spectators and pilots. This interest extends beyond combined air shows and model meets, however. Here are some of the other points advocated by the group.

First, the committee feels that the official regulations governing control flying should be amended so that the spectator is kept from within 100 feet of the flying circle instead of the present 75 feet. This makes sense, certainly. Anyone who has seen a speed ship tear loose from the lines won't quibble over the extra 25 feet. Besides, if the onlooker doesn't crowd close to the circle more folks can see the events.

In addition, it is suggested that in the case of free flight gas jobs where the spectator is on the downwind side from the takeoff or launching site a minimum distance of 500 feet be maintained between site and spectator. If the spectator is on upwind side from the site a minimum distance of 200 feet should be maintained between site and spectator. At all times the contest director must use good judgment and if necessary increase these distances. If it becomes apparent that model flying is endangering spectators or property, all activity shall be stopped until the situation can be remedied.

An area for free flight gas model testing shall be maintained separately from the official flying area, according to the committee. The official flying area shall be set up so as to allow contestants ample room in which to operate with minimum conflict with other models taking off.

To ensure enforcement of such regulations the contest board is expected to decree that at least 3 uniformed police officers (city, county or state) or three deputized adults be on hand to maintain order at power meets.

While that more or less covers what the safety committee has to say about the operation of contests, it is interesting to note that the group has some ideas on safe models.

It is felt in official circles that a model which has suffered structural damage—a wing broken or fuselage caved in—shall not be permitted to fly in the official flying area unless a representative of the directing officer feels that the field repairs are satisfactory. This all results from such incidents as when a wing tip has been damaged and the contestant in an effort to stay in the meet slashes off the other wing tip. Result: model spins in narrowly missing spectators and other contestants. This is a true incident witnessed by a member of the safety section.

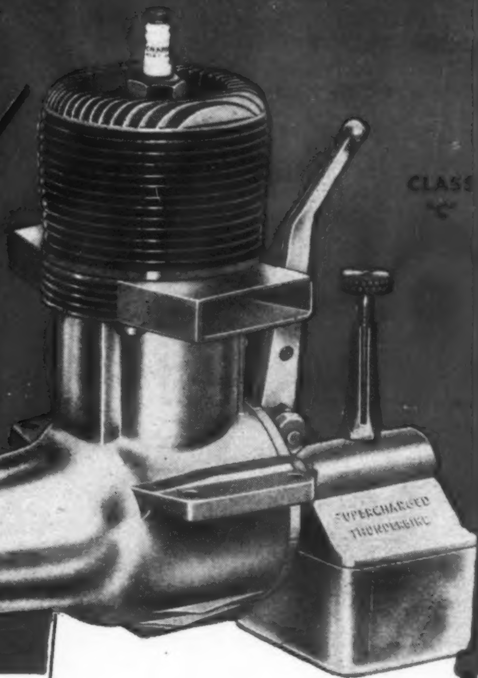
Obviously, with many meets being conducted and many novices entering it is quite necessary that certain minimums be adopted to protect the participant, the onlooker and the activity. It is only through means such as have been discussed here that this can be done. It is not because a small group of zealous individuals are interested in adding to an already too-lengthy list of regulations. Not at all. It is because we have some unthinking model flyers just as we have some unthinking Americans that the rest of us are saddled with a lot of rules that seem cumbersome and restrictive. Until the day comes when every model flyer operates his craft in a safe and sane manner—then only can we toss rules out the window and use our good common sense. But until that happy day it's obvious that the activity needs some easily understood, easy-to-apply safety standards.

Any followers of this column who may have an idea or two on how to instill safety practices in current contest and sport flying—well, just step up and speak your mind, men. Maybe if we all get together we can lick the high accident rate (speaking now of models spinning in) and encourage the model flyer to better adjust his ship.

You know, it was MODEL AIRPLANE NEWS which once before saved the day by creating the International Gas Model Airplane Association which fought restrictive bans on gas modeling and was the forerunner of the A.M.A. We can command a lot of attention, friends, if we just stick together. Let's *talk* "safety" and let's *practice* "safety".

A powerhouse-full of pleasure...
The finest gift in Santa's bag

Supercharged THUNDERBIRD



The only model engine with a Genuine Supercharger

Thundering out of the western skies is the mightiest miniature engine on the market—an engine with a genuine supercharger just like the "big ones"! Yes, the SUPERCHARGED THUNDERBIRD is the only model engine with an independent Supercharger Impeller*

The SUPERCHARGED THUNDERBIRD packs a wallop of extra power because the supercharger impeller forces a denser gas mixture into the combustion chamber and thus increases in efficiency as the r.p.m.'s increase, unlike engines without a supercharger. The SUPERCHARGED THUNDERBIRD starts easier... performs more smoothly... develops greater speed.

Engineered by experts in bigtime aviation, the SUPERCHARGED THUNDERBIRD is the super-special Christmas gift for the model enthusiast you wish to remember.

*Patent pending

1. Spark and mixture controls on rear of engine for easier operation without risk of injury from propeller.
2. Two ball bearings on crankshaft, and piston rings on a low "X" aluminum piston.
3. Two wide intake ports to assure better distribution in combustion chamber.
4. Two extra-large dual exhaust ports to clear out burned gas quickly.
5. All castings made by costly die cast method.

$24.95 including spark plug and gas tank (without coil and condenser)

BORE	Special
STROKE	31/32"
DISPL.	7/8"
WEIGHT (inc. gas tank)	.645
	13 oz.

Designed by and manufactured under the supervision of the men who trained 25,000 Army flyers at the Thunderbird and Falcon Fields in Arizona.

SCOTT MOTORS, INC.

SKY HARBOR AIRPORT • P. O. Box 831 • PHOENIX, ARIZONA

DEALERS, ORDER NOW!

Write or wire your Christmas order for SUPERCHARGED THUNDERBIRDS without delay. All orders will be filled on a first come, first served basis.

West Coast Tips

(Continued from page 12)

Goodale. 3. Jack Gilroy.

* *

As we told you before, the *Aero Modelers Assoc.* of No. Calif. is a sharp outfit and has done a lot for the boys in the Bay area. Here is the report of their meeting September 27, 1946, that will show you why:

Foreword: At our July 19th meeting a motion was carried that henceforth all motions made at our meetings would be tabled until the following meeting so that out-of-town clubs who are members of our association could vote by mail if unable to attend our meetings. This rule makes it necessary for all out-of-town clubs to receive a report on each meeting so their vote on any motion can be sent in to the Association Secretary before the next meeting takes place. It means that any club in No. California that joins the Association will have as much voice in its management and rules as any club that can attend its meetings. Motions for rule changes or any other Association business may also be entered by mail. Under this plan we respectfully invite any and all U-Control clubs to join our Association and help us get a standard set of Control Line Rules in force throughout California. We already have 15 U-Control Clubs representing approximately 452 control flyers in our organization. The large amount of interest and frequency of good contests has put our area in the lead in the entire U.S. Our contest rules have been adopted by many areas throughout the country and are rapidly being recognized as the leading method of competition in the Precision Stunt Event. Another advantage of joining the Association is that contest dates may be regulated so they will not conflict with each other. We are trying to keep these contests spaced about 4 weeks apart. It's a first come first served proposition so get your contest date request in early.

Any U-Control club may join the Association. Entry fee is $1.00 per club. Dues are on assessment basis and should not run more than $2.00 or $3.00 per year per club. Each club is allowed two representatives and 2 votes at our meetings.

Minutes of Meeting of Sept. 27, 1946

Meeting called to order at 7:45 P.M. by acting chairman, Al Waltz. Minutes of the last meeting were read and approved. New club joining—East Bay U-Control Flyers of Oakland, Bob Churchill, representative. New representatives introduced, Holm of Alameda Aeromodelers and Thunberg of Albany Control Flyers.

Club point standings for Davies Club Trophy; S.F.M.A.C. 14 pts., Oakland Vapor Trailers 10 pts., South City, 6 pts., Alameda 5 pts., Palo Alto 5 pts., Petaluma Do-Little Flying Club 4 pts., Oakland Air Foilers 2 pts., Vallejo 1 pt., Golden Gate Model Airs 1 pt.

A motion to join up with A.M.A. was tabled again until more information could be obtained from A.M.A. concerning U-Control Rules, how our Association and its clubs would be affected, etc.

A motion that hobby dealers may enter contests and compete for trophies but not for merchandise was not carried.

A motion was made that at the next meeting we draw up a set of team event rules, using as a basis the team event rules used at the Richmond Contest.

Richmond Team Event Rules

	Max. Points
Each plane flying	5 pts. each
Formation flying	15 pts.
Formation wingover	15 pts.
Formation loop	25 pts.
Rudder streamer cutting (3 ft. length)	20 pts.
Motor control	5 pts.
Dog fighting	15 pts.
Deliberate mid-air crash	35 pts.
Miscellaneous	25 pts.

Motion carried that the Secretary send a letter to S.F. Jr. C.C. commending them for their excellent contest and include the following points of constructive criticism as per their request.

1. Register contestants as they arrive.
2. Police the field without the officers' horses stepping on the lines.
3. Keep the planes in line that are waiting in the pits.
4. More circles for crowded classes.
5. Two P.A. Systems—one for Speed events—one for Precision.
6. Make all awards according to the number of entries in each class event.
7. Only one set of appearance judges for each precision class.
8. Train the speed timers.
9. Start on time.
10. Ropes and signs around the line pits.
11. Distribute the rules earlier.

Discussion was held to clarify our General Rule No. 7 as to who may pilot a speed plane. It was agreed that anyone may pilot it but no pilot may fly more than 2 ships with the exception of the planes entered by a physically handicapped owner. A club president may appoint a pilot to fly the physically handicapped owner's plane even though the proxy pilot has already flown 2 other planes.

Next contest, Berkeley Junior Chamber of Commerce on Oct. 20th at San Pablo Park in Berkeley on Ward and Mabel Sts.

Nov. 17th in Palo Alto.

Dec. ? open. Suggestion made that the 3 Oakland clubs put on a joint contest at Bushrod Park if available.

Next Association meeting will be Nov. 8th at Samuel Gompers Trade School, 22d and Bartlett Sts. in San Francisco.

Respectfully submitted,
Roy Mayes (Secretary),
1204 Delaware St.,
Berkeley 2, Calif.

As you can see, they are on a business-like basis. We would dearly love to see the So. Calif. Congress join up with the A.M.A. of N.C. if such a happening can be made to occur. Hint, hint. . . .

Four Blade Props & Spinners

(Continued from page 37)

made of wood and attached to the usual metal face plate of a lathe. A boss is turned on the wood face plate to fit the crankshaft nut hole of the spinner block for accurately centering it. Inside and outside of the spinner block are then turned down to the shape shown and the result is a spinner as in 7 which will fit over the crossed centers of the two-blade props. If care has been used in constructing the spinner it will be found to balance almost perfectly independent of the prop although it is best to balance the prop and spinner together. *Always reinstall the spinner in the same position on the prop to preserve balance.*

An excellent way of holding the spinner and the four-blade prop in position on the crankshaft is to have a metal lathe operator make you the special crankshaft nut of drawing 8. It can be made of brass although cold rolled steel is better. Instead of this type of nut the usual washer and hex nut can be used, being concealed within the spinner which is held on by two screws as shown dotted in 6 or by some other means you may devise. A nose plug can then be provided to fill out the flat forward end of the spinner which is otherwise filled out by the head of the special crankshaft nut.

Instead of a wood spinner, one of sheet metal or plastic can be used. Its edge is preferably seated in a shallow annular groove turned in the prop after it is completed. Final assembly is shown in 10 which illustrates a U-shaped clip soldered to opposite flats of the hex nut. The center of the clip is threaded to receive a machine or metal piercing screw that holds the spinner in position.

For comparable results of props with two to six blades, the reader is referred to the following table:

No. of Blades	*Diameter*
2	10"
3	9-1/4"
4	8-5/8"
5	8-1/8"
6	7-3/4"

Other factors being equal (such as pitch, blade shape, blade thickness, etc.) the above or proportionally similar diameters produce props which are substantially similar in performance.

FREE FLIGHT GASSIE

WANT a really reliable free flight job for sport flying? *The Rambler* construction story starting in this issue will be concluded in February MODEL AIRPLANE NEWS. This ship fills the need for a big stable flier for radio control and other experimental or sport work.

WORLD WAR I FANS!

FINAL details of the *Siemens Schuckert D4* fighter will be featured in Wylam Masterplans for February and will include details of the unusual motor that made this ship a success.

Don't miss the February 1947 issue of MODEL AIRPLANE NEWS

Rambler

(*Continued from page* 17)

surface at L.E., T.E. and the centersection. When dry, turn upsidedown and lay in the 3/16" x 3/8" main spar. Cut slots in the ribs for the 1/16" plywood dihedral gussets, jig up the wing panels for a four inch dihedral, cement in the gussets, and clamp them until dry. The underside of the nose is then sheeted with 1/16" balsa and the whole wing structure sanded carefully to assure a good covering job.

That is about the works for this month. If all the sub-assemblies described here happen to be finished before next month's issue is due, there is no reason why they can't be covered. Silkspan may be applied dry without difficulty, it should be water-shrunk in the usual manner and given at least four coats of clear dope, followed by two or three more coats of pigmented dope of the chosen color.

Fuselage and lower wing assemblies are not difficult and will be detailed in the concluding article next month.

Oil-E-Bird

(*Continued from page* 35)

nose of the fuselage. Cut out a V notch in the upper edge of fuselage at rear for the stabilizer bed plate (L). The notch at its forward end 2" from rear of fuselage should be 1/8" deep, measured from upper edge of fuselage: at its rear it should be zero. This gives a negative slant to the bed block of 1/8" in 2" which provides a 2° negative angle for the stabilizer. When the notch is smooth and its sides straight, cement the bed block in place holding it with pins and adjusting so it is absolutely level laterally; otherwise the stabilizer will be tilted to one side or the other. Cut out the dummy engine blocks and cement them in place as shown in the three-view plans.

Next cut out the stabilizer (M), stabilizer ribs (N) and fins (O). Cement two ribs one to each end of the stabilizer flush with its ends. Cement two ribs at the center 3/8" apart. These can be held in place with pins or clamps until the cement dries. The two fins are then cemented to each end of the stabilizer as indicated in plans.

Cut the wing out from 1/32" balsa (P). Also cut out four ribs (Q) from 1/8" balsa. Wet the balsa sheet thoroughly in hot water, curving it to the desired camber and allowing it to dry. While drying, curve it gently from time to time. When thoroughly dry cement the four ribs in place, holding them with clamps or pins. While waiting for the cement to set firmly, carve out the propeller (R) as indicated in 3-view plans from a balsa block 8" x 1-1/4" x 5/8". Draw diagonals from corner to corner and carve out the blade in the customary manner.

If desired use an 8" sawed propeller. However, it should be carefully shaped and sanded to proper form. In either case the tips must be rounded as shown. Make shaft (S) from 1/32" wire with hook at one end. Push straight end of the shaft forward through the hole in the metal bearing plug from the inside of fuselage, then place a small washer over the end of the shaft and force the straight end through the hole in center of propeller hub. Bend over the end of the protruding shaft into a U and force the end of the U back into the hub, coating it thoroughly with cement to hold it in place. The whole propeller blade can be coated

with cement to make it smooth and give it strength.

Next wet the center of the cambered wing, top and bottom, thoroughly in very hot water pressing down at center and bending up the wingtips to form the dihedral. Place a round jar filled with water or heavy pipe at least 2" in diameter across the center of the wing, on your bench. Raise each wing tip 2-1/2", supporting them with blocks or other means. Allow the wing to dry thoroughly overnight before removing the center wing or block.

The landing gear (T) is constructed next from 1/32" wire bent to the form and dimensions given. 1" balsa or hard wood wheels are placed over the axle ends of the landing gear. If balsa wheels are used it is suggested that brass or paper bushings be cemented in the hub so the shaft holes will not become enlarged by wear. Wheels are held in place by smearing the ends of the axles with cement and wrapping about 15 turns of medium thread around their ends tying the ends of the thread firmly. Cover this with cement, then fit the landing gear on to the fuselage, bending and adjusting the wire until it will hold itself firmly in place. Tension may be adjusted by pressing or squeezing together the loop that fits up against the underside of the fuselage.

Wing and stabilizer are held in place with rubberbands looped around them and the fuselage. Power is supplied by a rubber motor exactly 10" long of three strands of 1/8" flat rubber, or six strands (3 loops) of 1/16" x 1/30" rubber. Thread this motor through the fuselage hooking the front loops to the propeller hook and the rear to the anchor hook and tail skid.

If the wing is fastened to the underside of the body you have a low wing model. To make a parasol, bend the wire struts as shown at (U) and fasten these to the upper fuselage sides with rubberbands and small "S" hooks. Tie one rubberband to each loop of the strut assembly passing it around beneath the fuselage and hooking it to the corresponding leg of the struts on the other side. The wing is placed on top of the struts and held in place with rubberbands looped around the strut ends and over the wing.

A small elevation block 1/16" high is cemented to rear of the stabilizer bed plate to allow for stabilizer adjustment. When the model is flown as a low wing the rear of the stabilizer should be placed on top of this block; when flown as a parasol it should rest flat on the bed plate.

Make sure the wire struts for the parasol arrangement are formed so that when the wing rests upon them it is parallel with the fuselage upper edge. This gives it correct angle of incidence. Incidence can be adjusted by compressing or expanding the forward or rearward loops of the wire struts close to the wing.

To test your model see that all parts are in proper place and adjustment, with wing located approximately in position shown in plan view. Try short flights at first, winding the motor approximately 70 turns. When the plane is in proper adjustment during power flight and glide the motor can be wound fully. When flown as a stick model without the landing gear, move the wing about 1" farther to the rear, for proper balance.

Try various adjustments during your test flights and you will soon learn how to get best results from this little flier. When you have learned to control it properly, successful flights can be made indoors providing the flying space is from 50 to 60 feet square.

Plane on the Cover

(*Continued from page 29*)

ducting these tests that his interest in low aspect ratio planforms was first aroused. In 1932 Zimmerman conducted a series of tests on Clark Y airfoils having an aspect ratio of 1.27. Since aspect ratio is the relationship between span and chord of a wing (Span÷Average Chord, or $\frac{\text{Span}^2}{\text{Area}}$), and since this ratio is normally 6 or 7 in most wings, the significance of these tests is obvious.

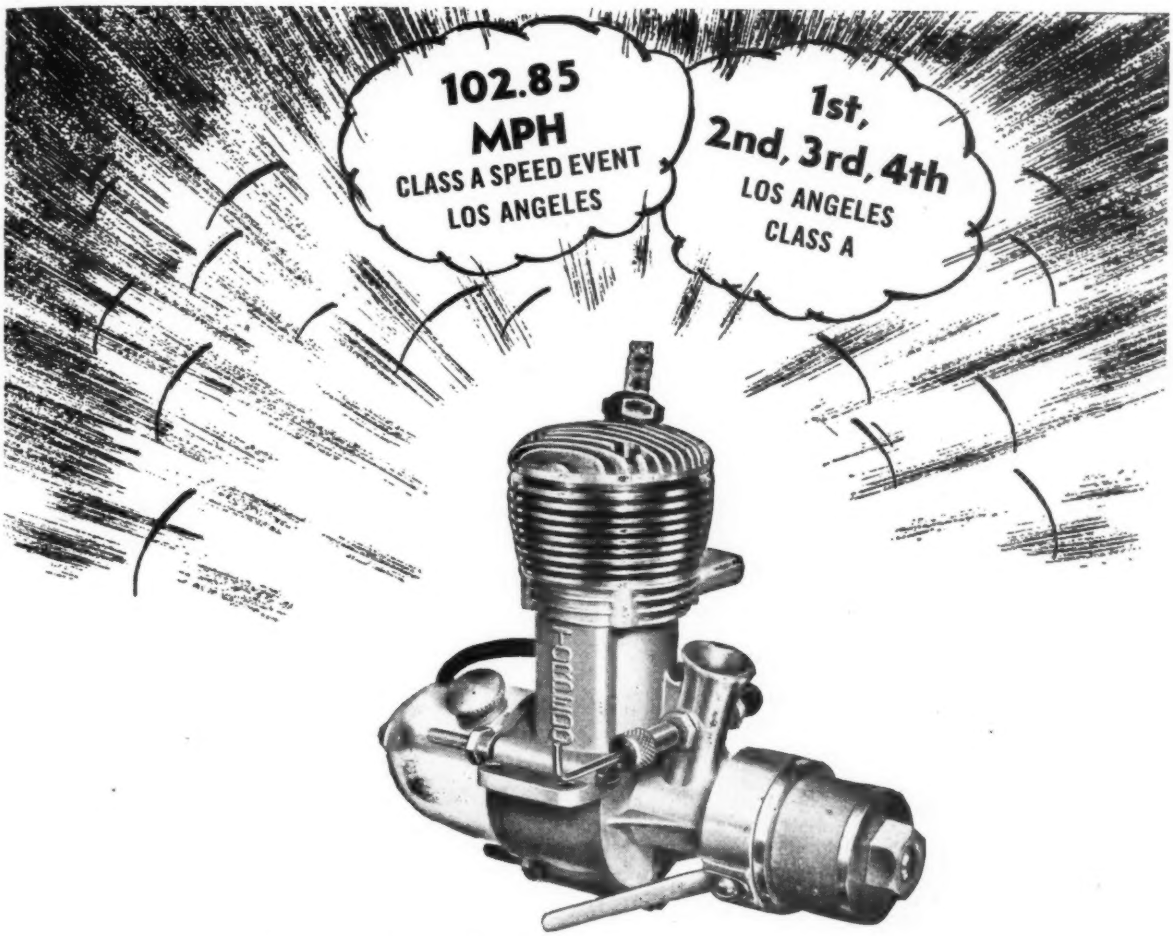
Low aspect ratio is normally considered a poor planform for a wing because of the induced drag it creates. Since the pressure on the upper surface of an airfoil is less than that on the lower surface (thereby producing lift), the region near the tips is characterized by a flow of this comparatively high pressure air from the lower surface around the tips into the region of comparatively low pressure on the upper surface. This curling of the air around the tips combined with the flow of the air rearward results in a continuous swirl of air rearward from the tips. These tip vortices create a spanwise movement of the air, inboard on the upper surface and outboard on the lower surface. Along the trailing edge of the wing where these two paths cross, more vortices are created. The combination of these tip and trailing edge vortices creates a strong downward motion of the air leaving the wing. This downwash results in the wing flying figuratively uphill all the time. The force vector (or resultant) created by this action is at right angles to the stream. The vertical component of this vector is what we refer to as lift, the horizontal component being referred to as drag.

However, since the downwash results in the airfoil flying at an angle that differs slightly from its actual geometric angle of attack, an additional component of the drag is introduced, which is known as the induced drag. This drag is dependent on the wing tip vortices; the stronger the latter are the more pronounced their effect on the whole airfoil and, therefore, the greater the drag they induce. Solution to this problem has been to move the wing tips as far out as possible from the wing root; in other words, a long narrow wing. Thus it has always been an accepted fact that the greater the aspect ratio the less the induced drag and, therefore, the greater range for a given quantity of fuel.

Zimmerman's tests of circular Clark Y airfoils, however, produced the astonishing result that minimum drag of the round airfoil was not greatly different than that for conventional aspect ratios. He continued his work and by 1935 had definitely established the fact that the round planform of low aspect ratio did not carry with it the serious adverse effects of the rectangular planform of low aspect ratio.

Having assured himself of the drag characteristics of his round planform, Zimmerman next devoted attention to the problem of dihedral, tip shape, slots and spoilers and other mechanical features of a possible airplane. It was while undergoing these investigations that he stumbled upon a remarkable idea. Since the vortices are created by air curling around the wingtip from bottom to top, why not place a propeller out in front of each vortex turning in the opposite direction, i.e. from top to bottom? In addition, his earlier tests had revealed that the round

(*Turn to page 61*)



THE PRIZE WINNING K. B. TORPEDO B

$18.50

LESS COIL AND CONDENSER

SPECIFICATIONS
- 2-cycle rotary valve
- .725" bore
- .724" stroke
- .299 cu. in. displacement
- Operates upright or inverted — 8000 to 9000 RPM with 11" free flight prop.
- 7 ounces bare weight

FLASH—Tony Naccarato of Los Angeles on October 20, set a speed of 102.85 MPH with a K & B Torpedo Engine, at the Los Angeles Aero Modelers First A.M.A. Sanctioned U-Control Contest. Tony's record flight was made from a pylon and he was flying his own original design—a super-streamlined job.

At the same meet, K & B Torpedo Engines made a clean sweep in the open event with Naccarato taking first,—R. C. Owens, Glendale, second—Arthur Shane, Long Beach, third—and Jeff Burgan, Inglewood, taking fourth and also first in the Junior Class A.

IN ITS CLASS, THE K & B TORPEDO ENGINE IS CONSISTENTLY PLACING IN THE MONEY IN MEETS FROM COAST TO COAST. IF YOU WANT TO WIN—GET A K & B TORPEDO!

AT YOUR DEALER — NOW!

*Registered U. S. Pat. Off.

Sole Manufacturer

K. & B. MANUFACTURING CO.

6901 SOUTH EASTERN AVENUE, BELL, CALIFORNIA

wing with dihedral actually produced less drag than a conventional wing at values of the lift coefficient used for climbing and cruising. This promised an extremely slow-flying airplane.

In 1936 Zimmerman patented his idea for this radical new airplane and began negotiations with various aircraft manufacturers regarding the possibilities of carrying his experiments forward with a full size airplane.

The Chance Vought Division of United Aircraft immediately displayed interest and in 1937 Zimmerman sold the idea to them. Vought hired him at once as consulting engineer on the project. Zimmerman began designing the first full size airplane incorporating his radical ideas. Various configurations were made and tested on models in the United Aircraft wind tunnels. Structural difficulties also plagued the project. For example, the wing trailing edge had to be thin, of airfoil shape and yet the control surfaces, tail wheel and other load-producing items had to be placed there.

Then, in the fall of 1940 the project took on new significance: the Navy was interested! Following numerous conferences and the preparation of various proposals, the Bureau of Aeronautics awarded a contract to Vought early in 1941 for an experimental airplane. This contract was significant in that it specified only a research airplane, not an experimental model of a service type (thus antedating the AAF contract for the Bell XS-1 by several years).

The airplane was to be of wooden construction and was to be merely a test airplane for the various problems associated with the new design. By the following year the strange craft, designated the Vought V-173, was completed. Test flights astonished the residents of the area around central Connecticut, both laymen and engineers alike. Here, indeed, was something *new* in the air!

Zimmerman and his Vought engineers made painstaking changes in the control system of the plane as well as in the wing configuration. After more than a hundred hours of tests on the craft, however, the Navy was convinced and a contract was awarded for construction of a combat plane based on the principles established by the research flights. The new craft was designated XF5U-1 and was required to meet all the standard VF type design requirements and carry the usual military load of armament, communication and emergency equipment.

Construction of the XF5U-1 began early in 1944 and the craft was completed early this year. Its first test flight was originally scheduled for September but it was recently announced that it would be postponed until early in 1947.

The Vought XF5U-1 is certainly like no other Navy fighter plane ever built, either in appearance or in performance capabilities. Its most unusual feature is the propeller installation used. Two four-bladed propellers are installed in the wing leading edge, one near each tip. They are of a special Hamilton Standard hub design which includes cyclical pitch control. This feature, used extensively on helicopters, causes the forward-moving blade to have a positive angle of attack and the rearward-moving blade to have an angle creating no lift and, therefore, little or no drag. These strange propellers, therefore, permit the XF5U-1 to literally stand on its tail in mid-air and to hover like a helicopter! As in the helicopter, hovering requires more power than actual flying and the minimum speed of the

XF5U-1 is determined by engines used.

For example, the present engines installed are two Pratt & Whitney *Twin Wasp* R-2000 types developing 1350 hp at 2700 rpm at takeoff. These engines were originally designed and built during the war exclusively for Douglas C-54 *Skymaster*. With this power the XF5U-1 will be able to hang on its props at a speed of 40 mph. This power will also give it a top speed in level flight of 425 mph. With the addition of water-injection equipment, which will permit higher power from the engine, the XF5U-1 is expected to slow down to 20 mph and to fly level at 460 mph. With gas turbine engines driving the propellers (turboprop units), Vought believes the craft will be able to hover motionless in the air at 0 mph and to be capable of flying 550 mph in level flight. Certainly, this is a paradox in aviation: the greater the power put into the airplane the slower it can fly!

The engines are "buried" in the wing on either side of the pilot and drive the propellers through extension shafts projecting at right angles outboard to the propeller shafts. Large air intakes are located in the wing leading edge to provide cooling air for the radial engines.

The control system of the XF5U-1 is located in the rear portion of the wing. Longitudinal control is provided by an elevator in the extreme tail of the wing, a surface added to the metal plane following tests without it on the wooden airplane. Directional control is provided by twin rudders mounted one on either side of the elevator. Most interesting, however, is the lateral control system which consists of two high aspect ratio surfaces projecting outboard from each rudder. These operate differentially in the manner of conventional ailerons.

The landing gear of the XF5U-1 is of conventional tractor design; two main gear units are located forward with a tail wheel aft. Each of the three units is fully retractable, a feature not incorporated on the flying scale model. This landing gear is unusual in a fighter plane in that dual wheels are mounted on each strut.

The pilot is located in the wing leading edge in a small fairing projecting slightly forward of the nose. A "bubble" canopy is used, which may be ejected while in flight in emergency. Controls are entirely conventional and the instrument panel contains the normal instruments for a twin-engine fighter plane. Only the pitch control mechanism for the special propellers is unique in the control array.

Although the Navy announced that only the experimental XF5U-1 has been contracted for to date, no pretense is made of a lack of interest in this strange airplane. Bureau of Aeronautics engineers and officers are keenly anticipating the first flight tests of the plane, which will constitute practically a "mid-air quick-change" design. At a moment's notice the XF5U-1 can be converted from a high speed fighter plane to a slow flying observation-scout plane simply by the movement of a lever. Another movement of the lever and the hovering helicopter suddenly heels over and speeds away as a fighter plane. Many Navy officers are confident that here is the long-awaited answer to a longstanding Navy problem, and engineers are equally confident that this ends an old rule that two different airplanes cannot be built in one.

As for Charles H. Zimmerman, there can be no doubt of his anticipation of the test flights. For this man and his idea, plus 15 years of painstaking, day-and-night work, has produced something new in staid, old aviation: the Flying Pancake!

Air Ways

(*Continued from page 33*)

Dutch further points out that at the Rockford, Ill. meet he had the longest flight of the day but only received second place when the totals were made. He feels the awards should go to the most consistent fliers and ships who can repeat their performance for three flights, rather than to the flier who might hook a lucky thermal just once.

He doesn't state any opinion on the use of only one delayed flight, or at least some number of delays less than the present nine, but he does come out strong for the rules as they are, calling for a 20 second engine run and 7 oz. per 100 sq. in. of wing area.

We suggest that readers look up this article in the November issue and also read Bill Effinger's article on rules (page 66, July 1946 issue) and let's see if any other constructive ideas hatch.

* *

A letter from one of our "Good Neighbors", Mauricio A. de Assumpçao, c/o Assumpçao & Cia. Ltda., Rua XV de Novembro, 330—6° andar, Sao Paulo, Brazil, enclosed Picture No. 1, an accurately detailed Ryan ST U-controliner. Mauricio, who drew up his own plans for the ship, has pursued the model building hobby since 1932 and his specialty is gas jobs. The Ryan fuselage is box construction, planked with 1/8" sheet balsa sanded, covered with aluminum and glued on with cement. The cast aluminum cowl is in 5 pieces and houses an *Ohlsson 60* engine. The wing, 50 in. span with 2-1/3 sq. ft. area, is of 2 spar construction planked with 1/8" sheet balsa painted with alumi-

num dope. The landing gear is equipped with an efficient shock absorber. Probably the most unusual feature of the model is the aluminum foil covering of the fuselage. To simulate the rivet heads, a sewing machine was fitted with attachments that put tiny perfectly-spaced "bumps" in the foil. The result was well nigh perfect. A test flight uncovered a nose-heavy defect which Mauricio has corrected by moving the C.G. back.

No. 2 is the contribution of Buddy Nulph, Hankinson, N.D., a Piper *Trainer* gas model with 9 ft. wingspan, powered by a *Dennymite* motor. Buddy built his model last winter, scaling the plans up from a smaller plan and adding a few alterations on landing gear and tail surfaces. Wing spars and ribs are entirely built up of pine and balsa construction; the longerons and leading and trailing edges were made of cedar and pine. A first test flight proved the ship to be tail heavy and resulted in a broken cowl. Buddy has now made the necessary adjustments and we are sure the *Trainer* will show her stuff!

Two photos, Nos. 3 and 4, can hardly do justice we think to the beautiful flying wing U-control design of F/O Edward J. Sharp, Sixth Ferrying Group, Long Beach, Calif. M.A.N. is indeed proud to present Mr. Sharp's constructionally-perfect four engined ship which was not intended as a partial replica of the Northrop XB-35 since the gear, wing and airfoil are all products of original ideas. Northrop, however, has inspected and shown a great deal of interest in the wing. This, incidentally, is Mr. Sharp's first U-control job—requiring 2-1/2 months building time for completion, at a cost of $250!

Power is supplied by four *Super Cyclones* which drive 10 in. dia. 8 in. pitch props. Two fuel tanks on the inside of each pair of engines supply 20 min. fuel for the engines, each of which has its own set of batteries and a common booster plug-in. Two-way switches for each engine facilitate starting without any interference from the other engines. The mixture and spark are on the outside when the removable panels are on. Two other sets of batteries provide current for landing and navigation lights. The landing lights and light master switch are attached to the nose wheel and come on when the gear is lowered. The fully retractable gear has dual tires and spring-operated oleotype shocks. Down locks are released by string tension when gear is to be pulled up, and lock automatically when gear is lowered.

Flaps, which are operated by wind pressure when the airplane is in flight, are nearly all the way up and come about half way down when the engines quit. Measurements are: wingspan—5 ft. 4 in.; chord—16 in.; weight—10 lbs. 5 oz. without fuel; color—black, yellow stripes.

No. 5 is A. P. Wilson's version of a commercialized Culver PQ-14. Mr. Wilson, 836 Prospect St., La Jolla, Calif., has provided no constructional details but states that his Culver is powered by an *Ohlsson 23* and has rewarded its builder with numerous extraordinary flights.

The 30 in. wingspan tailless biplane in No. 6 is an original design of Eut Tileston, Mesa View Ranch, Craig, Colo. *Atom*-powered, the model is very stable due to a high aspect ratio and 30° sweepback. The lower wing has 3° more incidence than the top, and each wing is washed out about 5°. As Mr. Tileston's photo shows us the biplane has no landing gear, and flight is accomplished by hand launching. The little ship is a fast flyer, has good

climb, a very gentle stall, but its glide is below average. Weight is 11.5 oz.; 10° dihedral is used.

Glider fans will be interested in No. 7, contributed by a South American reader, Fernando J. Rueda, San Luis 394, Posadas-Misiones, Rep. Argentina, and built by his friend, Ricardo Chaz Correa. Its flying performances mark the model as a good and stable flyer, a maximum time of 23:46 min. in the air having been attained. On one occasion this glider was O.O.S. in a 12:30 min. flight. Constructional details include a built-in structure with planked fuselage; a highly polished finish adds to its fine appearance. An N.A.C.A. 6409 airfoil is used with the stabilizer flat. Mr. Rueda tells us of one of the ship's outstanding characteristics: the small stabilizer, 11% of the wing area, which nevertheless gives good results.

Bill Noonan's contribution, No. 8, is a replica of a recco-torpedo plane (known as a "Myrt" by our pilots and gunners) of the late Jap naval air arm. Bill, of 4546 58th St., San Diego 5, Calif., drew construction plans for his model from pictures and dimensions appearing in an old publication distributed to the armed forces for aid in aircraft recognition. Bill liked this design because "it lent itself nicely to flying scale, long, nicely proportioned fuselage, relatively large tail surfaces and general simplicity of design." Readers will be interested in basic data on the real plane which Bill supplied: span—41 ft.; speed—370 mph.; armed with only one 7.9 machine gun mounted in rear cockpit. Its speed was relied on for protection from Allied fighters. Carrier-based, the ship had a range of 1800 miles; a 1760 lb. torpedo could be carried under the fuselage. The Japs called it "Saiun" or "Painted Cloud."

Switzerland is represented in "Air Ways" this month by No. 9 which features Paul Spalinger, Hauptstrasse 33, Binningen/Basle, Switzerland, and his rubber powered job. The ship, in spite of inferior-quality rubber, placed second at the 1945 Swiss Nationals.

Claiming that M.A.N. gave him his first start in learning to write English, a French reader, Aimé Robert, 44 Brunswick Ave., Kitchener, Ont., Canada, poses in our No. 10 spot with one of his collection of 40 models. Mr. Robert, a victim of the housing shortage, managed to find time to submit this photo of himself and his *Spitfire* model while in the process of personally constructing his own home, bottom to top! Specifications of this realistic-looking *Spitfire*, built from enlarged M.A.N. plans, are: wingpsan—55 in.; weight—14 oz.; 3 in. gas wheels; prop—16 in.; power—24 strands of ⅛ in. rubber. The ship comes through with crowd-attracting performances each time it's flown, writes Mr. Robert.

The smooth-looking towline glider in No. 11 is the work of Ernst Budke, 14276 Elmdale, Detroit 5, Mich. It is a Zweemodel *Vampier*, designed by one of Holland's leading modelers, J. Van Hattum of Rotterdam, and enlarged from plans published in Frank Zaic's book "Model Glider Design." The *Vampier* has a 33⅞ in. wingspan, a modified Göttingen 602 airfoil and a color scheme of red, white and blue. Total weight is only 2½ oz. Recently, Mr. Budke, armed with a 100 ft. towline, coaxed his ship into its best time of 4 min. 5 sec., helped along by the *Vampier's* very flat glide and slow sinking speed.

C. A. Sims' latest control liner, No. 12, was built from a M.A.N. three view in the

Oct., 1946, issue. The Curtiss *Triplane* has a 34 in. span with a 3 in. chord, which accounts for the unusual appearance of this World War I model. Powered by a Condor *Copper King* (which Mr. Sims points out renders the ship a "cinch" for motor control), the *Tripe* is an excellent flyer and tops for those who are in the market for a scale and stunt job. Mr. Sims is a Washington resident, of 103 South 9th St., Tacoma 2.

NEWS OF MODELERS

An Alabama reader, Debridge Humphries, 101 East 6th St., Anniston, is one of few modelers in this area and would like to correspond with hobbyists from all parts of the U.S.

Two M.A.N. fans in New Zealand recently asked "News of Modelers" help in securing penpals. Graham Hewitt, 27 Bowker St., Timaru, S.I., is a modeler of 7 years' experience who would be willing to swap ideas and photos on all phases of flying. Matthew V. Hickey, 39 Tory St., Petone, Wellington is interested in exchanging plans and kits with a builder in California or any southwestern state.

Bob Irvin, 404 West 8th St., West Frankfort, Ill. has a sad tale to relate and hopes you modelers in the vicinity of Frankfort can give him some assurance of recovery of his model, the *Brooklyn Dodger*. Bob lost his ship on an out-of-sight flight on Labor Day—he tells us the *Dodger*, which was powered by a Class B *Bullet* motor, carries his name and address.

CLUB NEWS

California

The F.G.M.A.C. rolls along on its busy schedule of monthly gas free flight and U-control contests, record glider trials, recent participation in the *Sacramento Skyoneers'* semi-annual free flight program in September and the Gilroy First Annual Championships free flight shindig, Gilroy Junior Chamber of Commerce-sponsored in October. The fellows have mustered a good number of points in gas events standings and line up thus:

Class A—1. H. Vincent, 650. 2. F. Mosier, 460. 3. R. Beggs, 291.
Class B—1. M. Martin, 590. 2. R. Balekian, 561. 3. H. Vincent, 540.
Class C—1. R. Mower, 470. 2. R. Farrar, 271. 3. R. Harper, 190.
Juniors—1. H. Vincent, 650. 2. R. Balekian, 580. 3. F. Mosier, 450.

CALLED the most successful meet ever held in the Bay area, the San Francisco Junior Chamber of Commerce contest on Sept. 22 attracted 12,000 spectators and 400 contestants who vied for $2,000 in prizes. This was the Chamber's third annual meet, sponsored by the Aviation Committee of the local organization. Results:

Gliders—Junior 1. Edward May. 2. Frank Pagano. 3. Robert King & Noel de Nevers.
Senior 1. Charles Dorsett. 2. David Acker. 3. Jack Jacoby.
Open 1. Dick Birkett. 2. Charles Pottol. 3. Gordon Peterson.
U-Control—Speed
Class A Junior—1. Charles Hallum.
Class B Junior—1. Donald Ruark. 2. Bill Hodges. 3. Charles Hallum.
Class C Junior—1. Lester Douglas. 2. Buz MacKerracher. 3. Daniel Cox.
Class A Senior—1. Mal Anderson. 2. John Drobshoff. 3. Joe Libonati.
Class B Senior—1. Bill Richards. 2. Mack Jurisich. 3. Bill Davis.
Class C Senior—1. Al Clarke. 2. Joe Libonati. 3. Don Defries.
U-Control—Precision.
Class A Junior—1. Lee Anderson. 2. Norman Benner. 3. Robert Lane.
Class B Junior—1. Lester Duffy. 2. Glenn Nickill. 3. Barbara Santina.
Class C Junior—1. Ralph Peshout. 2. Harvey Smith. 3. Bill Thunberg.
Class A Senior—1. Edward De Gear. 2. Arthur Zugnoni. 3. W. S. Biscay.

Class B Senior—1. Roy Mayes. 2. Don Viz. 3. Cal Morris

Class C Senior—1. Roy Mayes. 2. Bob Harper. 3. Carl Hoots.

Novelty—1. Robert Churchill. 2. M. Chapparelli. 3. Roy Spinelli.

JUNE AND JACK DYER'S monthly bulletin *The Aeroneer* serves to introduce to "Club News" another California club, *Prop Busters* of Oakland. Members are interested in all types of model flying and meet every other Friday night at Dake's Hobby Shop. Officers are: Walt Erickson, Pres.; Lee Ross, Secy.; Guy Dake, Contest Dir.

FREE FLIGHT advocates had a field day, courtesy of *Sacramento Skyoneers*, on Sept. 29. Final tallying lists these winners:

Class A—1. Ray Acord. 2. John Drobshoff. 3. Bob Polson.

Class B—1. Ray Acord. 2. E. Ecksteen. 3. Milton Taylor.

Class C—1. Jack Babbock. 2. Ed Cadwell. 3. Bill Gunther.

Colorado

Sept. 29 was the date of a free flight contest in Colorado Springs sponsored jointly by the Colorado Junior Chamber of Commerce and the *6K-MSL* model club. 50 entries were listed, many of which met disastrous fates in smashups while others turned in several good flights. A feature of the program was a control line flight exhibition and a jet motor demonstration.

Kansas

The active *Hy-Flyers Clubs* of Wichita, known to all modelers as sponsors of the 1946 Nationals, have put in their claim for recognition as the largest single organization of modelers in America. They have launched their winter season auspiciously with the announcement of a full round of events. Indoor control line gas model flying is planned for Nov. 3, Nov. 24, Dec. 8, Jan. 12, and Feb. 2 in the Forum Rose Room; the Forum Arena will be the scene of indoor rubber powered flying—gliders and microfilms—on Dec. 25 and Feb. 9.

Nevada

Las Vegas, on Oct. 19-20, was the setting for *Nevada Aveites'* Western States Aircraft Meet, in conjunction with the Third Annual Aviada (Light Plane Meet). $1,000 in merchandise prizes, trophies and awards made up the prize list, shared by winners in the following events: Free Flight Gas; Outdoor Handlaunched and Towline Gliders; U-Control Flying Scale, Speed, Precision and Team Stunt.

New Jersey

American Society of Model Aero Engineers presented the 3rd "Nationals" Model Airplane Championship Contest, dedicated to the memory of the late Gen. Billy Mitchell, on Oct. 19-20 at Bendix West Golf Course, Teterboro, N.J. A big two days for East Coast model enthusiasts, the meet was sanctioned by A.S.M.A.E. National Headquarters and presented a handsome array of prizes, including free dual flight time, kits, merchandise and trophies, to the following winners:

Free Flight Gas, Class A—1. Lt. Charles Burtner; 2. William White; 3. Frank Ehling.

Class B—1. Bryton Barron; 2. Edward Tefs; 3. John Wright.

Class C—1. Charles Varos; 2. Robert Darakian; 3. Lt. Charles Burtner.

Towline Glider—1. Boris Cheranich; 2. Don Jagger; 3. Richard Ensecki.

Handlaunched Glider—1. Peter Nishanian; 2. Frank Haveslack; 3. Fred Wilson.

Rubber Fuselage—1. Al Farrar; 2. Manny Langer; 3. James Forrest.

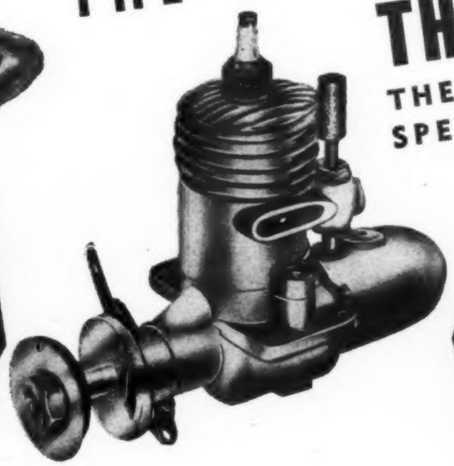
Rubber Stick—1. Manny Barbaria; 2. Norman Kubinak; 3. Walter Wilson.

(*Turn to page 70*)

THE MIGHTY, NEW

THOR "B"

THE ENGINE THAT SPELLS P-O-W-E-R



FACTORY TESTED READY TO RUN

ONLY $9.95

Complete with coil, condenser and fully illustrated instructions.

in KIT form

Fully machined, 5 minutes to assemble -

ONLY $6.95

Without coil and condenser

WITH FULL INSTRUCTIONS

TESTIMONIALS

Just a few of the many hundreds received from satisfied THOR users.

"I am an owner of one of your Thor engines. I think it is a good engine and have gotten many successful flights out of it. The last one was a 2½ mile, 1 hour 30 min. flight which was beautiful."
B. E., Midland, Texas.

"I also want you to know I am very pleased with the Thor engine I recently ordered from you. I'm amazed by the compression that is found in a motor as inexpensive as yours."
B. W., Ann Arbor, Mich.

"I received my Thor engine and am very much pleased with it."
F. G., Clinton, Okla.

"I have really enjoyed my Thor since I have had it."
B. W., Orlando, Fla.

"Have received my Thor engine and am well pleased with it."
E. C., Norfolk, Va.

"I am really surprised and pleased with my Thor engine. It is really of fine workmanship and materials."
D. J., Sanford, Fla.

"A friend of mine received a motor from you the other day and it runs perfect. Please send me one right away."
R. C., Vestal, N.Y.

"I like the engine very well and it runs good."
S. S., Nashville, Tenn.

"I have gotten very satisfactory performance from your Thor."
G. B., San Rafael, Calif.

"I like the even and steady way it runs much better than several other motors I have owned. It also seems to have plenty of soup for its size."
B. L., Warm Springs, Mont.

"We are in receipt of the two Thor engines we ordered from you recently and are very well pleased with this motor and are enclosing our check for 4 more of these engines."
S. S., Pampa, Texas.

"I am a pleased and satisfied owner of one of your Thor gasoline engines.
S. W., Rutledge, Pa.

"After seeing one of the Thor engines run which was owned by one of my buddies, I reached a conclusion that it was a superior engine for the listed price."
W. F., Del. Co., Pa.

"I am a proud owner of your Thor engine and it runs with clockwork precision."
A. L., Long Beach, N.Y.

"The first ½ dozen were great so now ship me with haste 4 dozen more."
H. H. Omaha, Nebr.

"I am very pleased with my Thor engine."
B. R., Middlesboro, Ky.

"I am very pleased with your engine and hope to have it in a contest in the near future."
A. L., Long Beach, N.Y.

"Have had this engine for about one week now and am having excellent results with it."
O. W., Gulfport, Miss.

AMERICA'S HOBBY CENTER, INC.

THOR—The Engine that won't be beat in any price field.

The Ideal Engine for all models, planes, boats and race cars!

Just a "twist of the wrist," and she's off—smooth, velveted power. Never lets you down!

➔ This is your engine — powerful, smooth, streamlined. Featuring the newest technical developments in the model engine field. Just a "twist of the wrist" and the Thor starts with a roar. It's as simple as all that!

FLASH!

THE NEW THOR "B" IS IN THE MONEY!

Three "firsts" in U.S. and Canadian contests.

OVER 20,000 THORS

have been sold this year

SPECIFICATIONS

H.P.: 1/6	Displacement: .29
Bore: 13/16	R.P.M.: 300-11,000
Stroke: 9/16	Weight: 4½ oz.

Class B, NAA RULES

Jobbers: Write for attractive discounts

Dealers: If your jobber does not have THOR in stock, order direct, giving jobber's name

IMMEDIATE DELIVERIES

PLUS THESE EXTRA ADVANTAGES:

- Ideal for free-flight and U-Control planes, boats and midget cars
- Complete fully illustrated instruction manuals
- Full 30 day guarantee against defective parts
- Easy to start, "a twist of the wrist"
- High compression ratio for instant starting
- Steady and consistent running
- Automatic carburetor for quick break-in
- Invertible and runs in either direction
- Every part precision engineered to perfection
- Lowest weight of all "B" engines without sacrifice of power
- Streamlined for cooler and longer operation
- New intake design for non-flooding and positive adjustment
- Piston, cylinder and bearing surfaces micro-precision fitted to .0001"
- Crankshaft of polished-ground steel, scientifically balanced. Extra long
- Special oil grooves for longer life
- 1" bearing surface with forced double lubrication for longer wear
- Uniflow piston
- Integral all-metal tank
- Castings made of new "THOR" alloy. With more heat dissipation and wearing quality than any other engine
- Perma-designed foolproof timer—never needs adjustment—can't slip in operation. Made of Beryllium
- Replacement parts available and interchangeable

And every engine has the new PRESTO disc starter for quick, easy starting

Only our large volume and tremendous production make it possible to give you so much value for so little.

SEND ONLY $1.—We Will Ship Your Engine Collect C.O.D. the Same Day; or Send Full Price Plus 25c Extra and We Ship Parcel Post Insured.

(Thor Engines Division) Dept. M17T 156 West 22nd Street, New York 11, New York

Send self-addressed, stamped envelope for FREE illustrated booklet

U-Control, Class A—1. William Molinaro; 2. Karl Lachman; 3. John Diehl.

Class B—1. William Molinaro; 2. Raymond O'Neill; 3. Edward Dormer.

Class C—1. Henry Laurys; 2. Carl Lachman; 3. John Diehl.

Special trophies: Best consecutive 3 flights, rubber—Manny Barbaria.

High point club—Bronx Aero Club.

Longest flight, Class C Free Flight—Charles Varos.

Longest single flight in contest—Charles Varos.

A NEW CLUB, the *Jersey Prop-Nuts* of Newark, is launched on an all-out drive to organize builders in and around Newark. R. J. Buragas, President, has issued a call to modelers to come in and investigate the club at Wallin's Hobby Shop, 1 Springfield Ave., Newark.

CONTROL LINE flyers turned out in full force on Nov. 10 for the Atlantic City Control Line Championships held at Suicide Bowl. The meet, A.M.A.-sanctioned, was sponsored by Lt. J. Willis Gale Post 215, V.F.W., directed by Alfred Rubin, and included Classes A, B & C, stunt and beauty control line events.

New York

The *Daily Mirror* Flying Fair, presented on Sept. 29 at Grumman Field, Bethpage, L.I. was run off in spectacular style, to the gratification of 125,000 appreciative spectators. Over 10,000 flights were made by 1,454 contestants, and when the heavy amount of tabulating was completed judges pronounced Ernest Babcock Jr., 18, of Morris Plains, N.J.—winner of 40 top awards in model meets from coast to coast—the champ with a high point score of 1,260. Ernie took the most coveted prize of the show, a $3450 Ercoupe. Winners and runners-up in all events were:

U-Control Speed, Class A—1. Ernest Babcock, Jr., 75 mph. 2. Jack Norris, 75 mph. 3. Bernard Collins, 68 mph.

U-Control Speed, Class B—1. Stanley Sieminski, 92 mph. 2. William Gertock, 90 mph. 3. George Suginchi, 88 mph.

U-Control Speed, Class C—1. Ernest Babcock, Jr., 112½ mph.

2. Stanley Sieminski, 111½ mph. 3. William Seidler, 111½ mph.

Free Flight, Class A—1. Frank Ehling, 14:57 min. 2. Sgt. Henry Goelzen, 11:38 min. 3. Al Pardocchi, 11:38 min.

Free Flight, Class B—1. Stanley Sultan, 34:20 min. 2. Frank Antosh, 19:32 min. 3. Richard Sledek, 19:03 min.

Free Flight, Class C—1. Thomas Carlo, 26:12 min. 2. Serges Morris, 17:30 min. 3. Aubry Pearson, 15:07 min.

U-Control Stunt (all classes combined)—1. Ernest Babcock, 103 pts. 2. Robert Harlieb, 84 pts. 3. Harold DeBolt, 80 pts.

U-Control Flying Scale Stunt (all classes combined)—1. Harold DeBolt, 110 pts. 2. Ernest Babcock, Jr., 97 pts. 3. Arthur Hasselbach, 93 pts.

Radio Control—1. Joseph Raspante, 9 pts. 2. Harold Edward, 7 pts. 3. Chester Lanzo, 5 pts.

Jet Propulsion—1. Arthur Hasselbach, 38 pts. 2. John Wardlow, 19 pts. 3. Richard Mahoney, 5 pts.

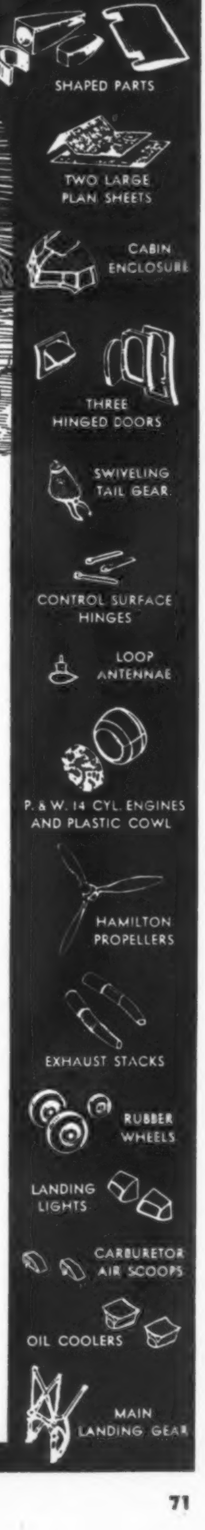
Special Class, Grumman Employees—1. Joseph Frens, 4:52 min. 2. Donald Towne, 3:50 min. 3. Alfred Van Wymersch, 2:34 min.

THE NAVY DAY celebration on Oct. 26 at U.S. Naval Air Station, Floyd Bennet Field, Brooklyn, main-evented its air-show with an exciting simulated attack on the airfield and included in the wide range of events helicopter, Bearcat and Tigercat demonstration flights, plus a model meet. Winners of a nationwide contest for control liners guided their ships to strafe and attack toy balloons in a demonstration imitating the tactics of regular Naval Air Units.

HICKSVILLE, L.I. was the scene of Brooklyn *Sky Scrapers* model club's first postwar contest, held in September. Pres. Jerry Stoloff turned over to first place winners in Class A, B & C Free Flight events three perpetual trophies which will be awarded annually to preserve the memory of three *Sky Scrapers* who lost their lives in service during the war. Here is a partial list of winners:

Class C Free Flight Gas—1. John Thompson.

(*Turn to page 72*)



YOU'VE DREAMED OF A SOLID MODEL KIT LIKE THIS—HERE IT IS!

The magic of Aladdin's lamp could not make your model building dreams come true more surely than the MAIRCRAFT quarter scale DC-3—the greatest solid kit ever developed.

For six months MAIRCRAFTSMEN worked to produce the world's finest model kit. Stacks of blueprints, handbooks, field manuals, and photographs supplied by Douglas engineers, major Airlines, the Army and Navy were used to produce super-detailed plans. A 28" x 42" Engineering Sheet shows all the hair-splitting detailed information you hoped someday to find on a model plan—access doors, skin laps, and many informational views. A special DC-3 instruction book clearly illustrates pre-tested building steps.

No dream can equal the authentic detail of the miniature main landing gears, swiveling tail gear, tiny hinged doors, Pratt and Whitney Twin Wasp engines, Hamilton Standard propellers or the many other accessories—over 30 pieces in all—also authentic UNITED AIR LINES insignia in four colors.

Never before has there been such a model kit—and never such an airplane. The gleaming "work horse" of the airlines and its wartime sisters the C-47, C-53 and R4D, almost 11,000 airplanes in all, have flown more miles, carried more cargo and passengers than any other airplane.

Your model of the famous DC-3, with its 24" wing span, will win prizes and praise from your friends, teachers and parents.

$9.95

MUCH MORE THAN A MODEL—IT'S A MINIATURE AIRPLANE!

SOUND ENGINEERING · HONEST VALUES · SINCERE POLICIES

Maircraft INC.
4026 ELSTON AVE.
CHICAGO 18, ILL.

Export Dept., 120 Wall St., New York 5, N. Y. Cable Address: Concordia

2. Warren Fletcher. 3. Leonard Barron.

Class B Free Flight Gas—1. George Rizkalla. 2. Joel Howard. 3. Lee Arrowsmith.

Class A Free Flight Gas—1. Frank O'Brien. 2. Anthony Antunes. 3. Melvin Vreeland.

Flying Scale, All Classes Combined—1. Leonard Hauff. 2. John R. Blohm. 3. Vernon Peterson.

HERE is an item we know will interest contest directors and sponsors. Boyle-Midway, Inc. announces an offer to provide prizes of kits containing Plastic Wood and Plastic Wood Solvent to supplement regular prizes in recognized model contests. Sponsors should send in general details of the meet plus a list of regular prizes to be awarded, and sufficient kits for 36 winners will be sent to them. Address Plastic Wood Contest Div., Boyle-Midway, Inc., 22 East 40th St., New York 16, N.Y.

CONTINUING its ambitious program to organize, by mail, modelers throughout the country to whom club membership is not available locally, the Model Airplane Division, American Hobby Institute, Jamaica, has outlined a new instructive course for members. Through the medium of the group's newspaper, the *Comet*, model fans who have an aviation career in mind may refer to a list of aeronautical positions available to them, and accredited vocational or professional arts schools which will prepare them for these positions. A study of the fundamentals of jet propulsion will also be presented in future issues.

JOHN M. LYNCH of Industrial Arts Dept. in Middletown High School informs us of the first stages of a model club in the school which already consists of 14 members, some of whom are experienced modelers.

Pennsylvania

High point winners at the Philadelphia *Record* Flying Circus in September were:

Beauty—1. A. A. Pegow, Jr. 2. Art Cram. 3. C. Sullivan.

Stunt, Control Line—1. Harold Debolt. 2. Jim Rebholz. 3. Ernest Babcock.

Stunt, Free Flight—1. Carol Buress. 2. Dan Hoey. 3. Ronald Sheppard.

Control Line, Open—1. S. Sieminski. 2. Matthew Kania. 3. Newell R. Ackley.

Control Line, Senior—1. Ernest Babcock. 2. G. Rusasay. 3. Harry Preiss

Control Line, Junior—1. K. Mercer. 2. Alan McFarlan. 3. Richard Hendricks.

Control Line, Open, Class B—1. G. Sugiuchi. 2. M. E. Lutz. 3. S. Sieminski.

Control Line, Open, Class A—1. Carl B. Ripley. 2. Carl M. Lachman. 3. Dick Korda

Control Line, Senior, Class B—1. Thomas Burns. 2. J. Ridella. 3. Ernest Babcock.

Control Line, Senior, Class A—1. Jack Norris. 2. Ernest Babcock. 3. C. Wiechard.

Control Line, Junior, Class B—1. R. Lessig. 2. J. Stewart.

Control Line, Junior, Class A—1. Kent Mercer.

Free Flight, Open, Class C—1. Edward Ritter. 2. Frank Lashik. 3. Jas. E. Yonker.

Free Flight, Open, Class B—1. P. R. Slader. 2. R. Folz. 3. L. Barron.

Free Flight, Open, Class A—1. Ed Mileski. 2. F. E. McElwee. 3. Bob Fozz.

Free Flight, Senior—1. Robert Syvamem. 2. John B. Droszegi. 3. Jas. F. MacNermey.

Free Flight, Junior—1. Robert K. Kissner. 2. Richard Jackson. 3. Irvine Smith.

Free Flight, Senior, Class B—1. J. Norris. 2. C. R. Mianny. 3. J. Triolo.

Free Flight, Senior, Class A—1. B. Robertson. 2. W. T. Fander, Jr. 3. J. Forehand.

Free Flight, Junior, Class B—1. K. Geer. 2. J. Converse. 3. D. Gutglueck.

Free Flight, Junior, Class A—1. V. L. Mixtev. 2. A. A. Ludwigsen. 3. H. Danick

Rubber, Senior—1. Erving Boehm. 2. Geo. DeGabriel. 3. Manny Langer.

Rubber, Open—1. Chester D. Lanzo. 2. C. R. Dintz. 3. Tony Becker.

Rubber, Open, Junior—1. John Englehardt. 2. William Hewton. 3. Buddy Flesher.

Towline Glider, Open—1. Wm. Halsted. 2. Benton Cleveland. 3. Dick Korda.

Towline Glider, Senior—1. Frank Zymroz. 2. Allen Hein. 3. R. Burrows.

Towline Glider, Junior—1. Donald Ogren. 2. Boris Cheranich. 3. Bob Perkins.

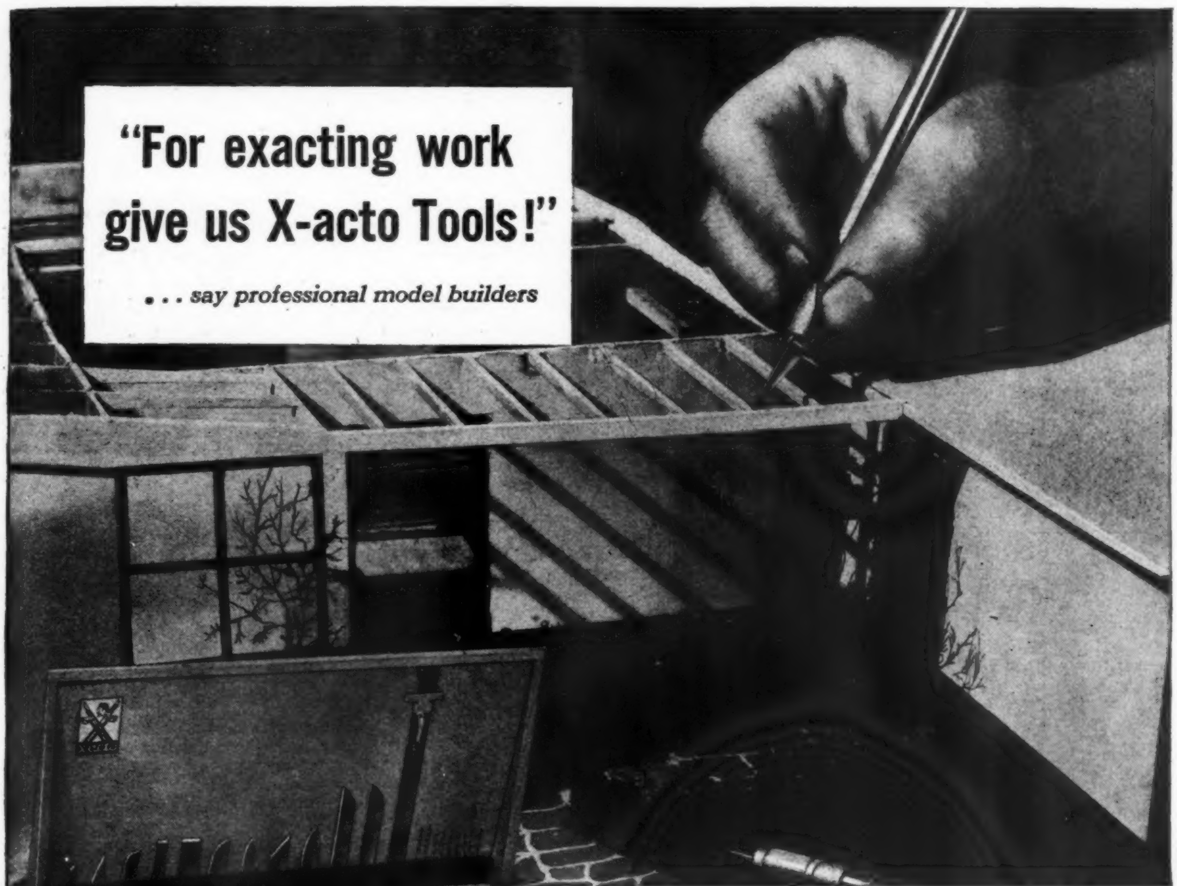
Rhode Island

North Kingstown boasts its own model

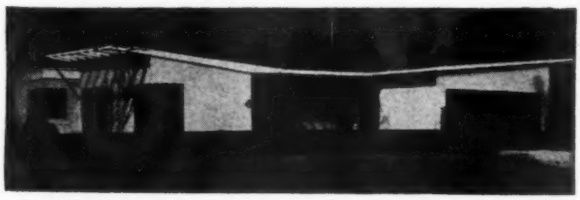
(*Turn to page 74*)

"For exacting work give us X-acto Tools!"

. . . say professional model builders



THE BIG SHOT—No. 85 X-acto Tool Chest. A knife, a tool for every job. Designed for safety and sure control. Includes: 3 X-acto Knives; complete blade assortment; sander; stripper; planer; saw; drills and holders; ruler. Complete in desk-drawer-size wooden chest . . . $12.50.



Models and Miniatures specializes in architectural layout, city planning and landscape models . . . often to as small a scale as one inch equals 16 feet. "X-acto is a *must* for every model builder," they say.

Scale models for the Hollywood Bowl, Sam Goldwyn Studio props, Shell Oil Company models, are only a few of the big miniature jobs for which the firm of *Models and Miniatures* in Los Angeles uses X-acto tools. Knives, pin vises, mat cutters, strippers, planes, sanders . . . they use them all — and say, "as the details on our models are most exacting, we find the versatile X-acto tools *indispensable!*" Here modelmaker uses No. 2 Knife ($1.00 complete with 5 assorted blades).

Thomas Galloway, model consultant, working on detail of scale-model miniature. "A No. 85 X-acto Tool Chest for every new employee's work bench" is on the schedule for this busy studio.

X-acto* KNIVES & TOOLS

Singly or in sets, 25c to $12.50
At hobby, gift and hardware shops

X-acto Crescent Products Co., Inc., 440 Fourth Av., N. Y. 16
In Canada: Handicraft Tools, Ltd., Hermant Bldg., Toronto
**Reg. U. S. Pat. Off.*

club, the *Model Maniacs*, who held their first official meeting in September. A U-control contest to boost membership will be staged Dec. 28.

Tennessee

Representatives of the Johnson City *Airscrews* captured four awards in the Knoxville State Model Airplane meet in September. Bill Aguilard placed first in Class A Free Flight; Charlotte Rowe, only girl contestant in the meet, won first prize in Towline Glider; Fred Fogelman was third in Class B Free Flight; Jack McNabb was fifth in Class B Free Flight.

Texas

The last two days, Dec. 14 & 15, of the International Aviation Celebration in El Paso will be reserved for a model plane meet that will include junior and senior classes, with trophies to be awarded for speed, precision and stunt flying. Sponsors of the Celebration, the Aviation committee of El Paso Chamber of Commerce, are making elaborate preparations at the municipal airport to insure a successful round of events—a special circle built on an asphalt apron to insure the safety of the spectators is in process of construction, and a smooth hard dirt surface will be provided for precision and stunt flyers. The two-day jamboree is open to any modeler, regardless of club affiliation.

Washington

The *Seattle Guideliners* and the *Boeing Enginairs* held their largest contest to date on September 29, the Northwest Championship Guideline Meet, at Graves Field. 109 entrants competed and the results were as follows:

Ralph Flaaten took first place in the Precision event; Johnny Dimmer copped the No. 1 spot in Class D Senior Speed, with Charlie Fisher of the *Enginairs* not far behind with a second; D. Brown won in Class C Senior Speed, the Class B Senior Speed award for first place going to Lynn Johnson; Chuck Hollinger raised the Class A record for a first in that event; while Johnny Dimmer and Rudy Mayer were listed as firsts in the Stunt and Scale competition respectively.

THE *Olympia O-Macs* have posted these results for their annual contest in August at Rainier Prairie:

Junior—Class A—1. Boronsky. 2. Hudspeth. 3. Thomas.
Class B—1. Goldstein. 2. Gordon. 3. Feuz.
Class C—1. Nichol. 2. Wagner. 3. Hammond.
Senior—Class A—1. Baumgardner. 2. Willemin. 3. Hollinger.
Class B—1. Wollock. 2. Burr. 3. Hughes.
Class C—1. Hollinger. 2. Entrop. 3. Enticknop.
Open Scale—1. Hughes. 2. Watkins.
Open Cross Country—1. Cole. 2. Stevens. 3. Loison.
Longest Flight—1. Nichol.
Highest Average—1. Hollinger.

England

Southend and District Model Air Plane Club of Essex announced that arrangements are going forward to hold a decentralized towline glider meet with the *Bronx Aero Club*, N.Y. next summer.

Canal Zone

S/Sgt. F. S. Schwanz writes us of the recent formation of a model club, as yet unnamed, at France Field in Panama. 25 men comprise this group of model enthusiasts at present.

South America

George M. Galster sent us an account of a Bolivian model meet, together with some background material on the devel-

(Turn to page 77)

MODEL 300
(CLASS B)
Displacement
.299 cu. in.
$19.75 Less Coil and Condenser

THE **Dependable* CANNON

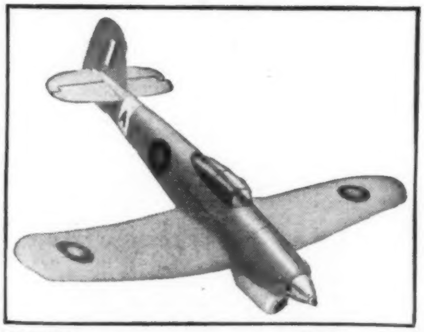
**Write for comments from users*

CANNON MANUFACTURING COMPANY • 1878 East 18th Street, Dept. B., Cleveland 14, Ohio

MODEL 358
(CLASS C)
Displacement
.358 cu. in.
$21.50 Less Coil and Condenser

GET THESE BEAUTIES TODAY

The Most Gorgeous Models in the World!

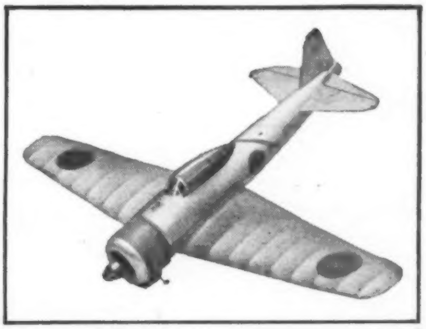


TYPHOON **$10.95**

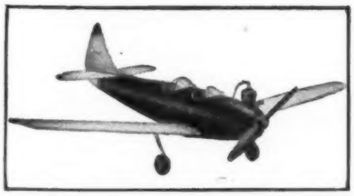
HOLLYWOOD MODELS

With clear, transparent plastic fuselage shells (Pat. Pend.). Stronger, sleeker models—easier to build—better finish. Complete kits, less liquids and decals. Tops in model values. Available soon—Corsair and M.E.—109. Watch for 'em.

More popular than ever: the original trophy-happy SNAFU Ercoupe. Team winner of 1946 Western Open: team winner of 1946 Wichita Nationals, and so many more, you can't count 'em! (Shown, lower right). A SNAFU Ercoupe modification won the Junior National Championship.



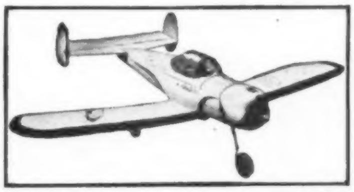
JAP ZERO .... **$ 9.95**



P. T.-19 .... **$ 8.50**

FLASH—The terrific "90" plastic prop has been "beefed-up" at the hub. Ask your dealer.

LOOK—Have you tried a COMPENSATOR for that balky engine run? Three years of testing can't be wrong. It's 65c complete, including full instructions. (Pat. Pend.)



ERCOUPE **$12.50**

SNAFU sponge-treaded wheels 2⅝", pair 50c; 1⅞", pair 40c; tail wheels ⅞", pair 20c; 1⅛", pair 30c; SNAFU perfection plastic props 10" 75c; 12" 90c; tether handles 20c; reels 35c; bell cranks (3) 15c.

If your dealer's out, write us—send dealer's name and address

ASK YOUR FRIENDLY DEALER FOR

SNAFU Box 1948

Hollywood 28, Calif. "Home of the Hollywood Models"

TRY A TAILLESS . . .

TAILLESS airplanes are in the news these days. Try your hand at one; full details of a tailless control liner will appear in the February 1947 issue of MODEL AIRPLANE NEWS.

opment of the hobby in this country. Interest in model building, an activity only recently introduced to Bolivia, is flourishing rapidly since it has become part of the government's program to make the country airminded. Because builders are handicapped by an absolute lack of material, they are forced to rely on substitutes such as old automobile inner tubes for a rubber supply source; balsa wood was unobtainable up until a few months ago when the government began the practice of flying the material in from the jungle; each builder has his own secret dope formula because commercial preparations are unheard of. Gas motors are far beyond the price range for an average Bolivian hobbyist so rubber-powered models and gliders reign supreme in popularity. At the second annual model meet held at Cochabamba on Sept. 15, rubber jobs, classified by maximum wingspans of 60 cm and 150 cm, were hand launched. Gliders, consisting of two classes of 80 cm and 200 cm spans, were airborne by a tow behind a bicycle.

China

Capt. Robert M. Dial of AAF reports on the model picture in China. Capt. Dial (of Detroit, Mich.) attended at Shanghai a nationwide government-sponsored meet on Aug. 12 which was run off simultaneously at four other locations in China—Nanking, Chungking, Kunming and Chengtu. The contest was a well planned event, advertised and publicized both by radio and newspaper. Foreigners were invited to participate but Capt. Dial was the only white person registered. After much haranguing in Chinese on the part of meet officials, the American modeler was prevented from flying because his was the only control line ship entered. Lack of competition led to eventual permission to place the model on exhibition, since it was the first control liner ever built in China and entered in a contest. Here is Capt. Dial's own description of the program:

"Surprisingly, there were over 200 models entered. There were seven gas models, all pylon jobs, mostly of original design—five used Japanese engines and the others had American prewar engines. The models were made of local wood of poor quality and strength characteristics but the workmanship was amazingly good—much better, in fact, than most average American gas models. Not one of the gas models left the ground because of engine difficulties. I suspect their wiring systems were poorly constructed. The Chinese have no American imports, up to now, and they must manufacture their own glue, strip their own wood and improvise their own parts and materials. They reminded me strongly of American model progress about 15 years ago.

"The rubber models were very good. They had stick and cabin models, tow-launched and handlaunched gliders and a few others such as canards, pushers, etc. There was not one scale model in the 200 rubber powered ships. Some were built entirely of wire and were covered with cloth. The weather was good but the wind was a little strong at the contest. However, there were several out-of-sight flights and I personally saw one tow-launched glider fly over 5 minutes O.O.S."

See Page 13

Design Forum

(*Continued from page 22*)

has limitations. It can carry just so much weight at a given speed. Increasing the number of passengers and the facilities a plane can carry makes it necessary to increase the power. By increasing the power and weight of payload the structure must be heavier. Consequently the increase in power must be sufficient to carry not only a greater payload but the proportionally larger structure required.

Many people have tried to sneak up on this problem and grasp it by the horns while no one was looking, but it is a case of dog chasing his tail. Nature and the laws of aerodynamics are inflexible. If you wish to carry more payload you must have more airplane and more power proportionately, and there is no way of getting around it if the design of the airplane is governed and limited by the procedure and the principles upon which they are now based. The only way to carry more weight with less airplane is to develop some new gadget or discover some new principle that will increase the airplane's efficiency or lifting capacity without increasing power or weight. Many designers would have been discouraged by Mrs. Wattson's specifications and we must give her husband considerable credit not only for attempting to draw up an airplane that will fulfill them but also for the design which he has worked out, Fig. 1.

In effect it is a flying boat. He has recognized from the first that Mrs. Wattson demanded comfort more than speed. Consequently, power could be applied to carry weight rather than to develop exceptional speed. We will not attempt here to improve on Mr. Wattson's design. He has handled it in a most logical and professional manner. Our only comments are to agree that the wings should be moved forward to obtain proper balance. Also we would advise moving the engines slightly forward, making it possible to shorten the engine's nacelle and bring the engine weight closer to the wing spar to which it must be attached for support.

The tail moment arm is quite short. Moving the wings forward would increase this to advantage. In fact, we believe it advisable to lengthen the tail so the distance between wing and stabilizer will be equal to at least two-thirds of one wing span. It is also advisable to lower the stabilizer slightly. With the stabilizer in the position shown a very strong and heavy fin is required to support it. Little advantage is gained in placing the stabilizer so far above the thrust line. It will operate efficiently and will not be blanketed by the wing if placed so that one-third of the rudder is above it. In this position the slipstream will pass below it and will have little effect upon it with the longer moment arm (distance between wing and stabilizer).

It is advisable also to increase the stabilizer area because the weight of this airplane is fairly well distributed throughout the length of the fuselage and not concentrated at one point as in the ordinary sport plane. As shown, the structure can be made very light compared to the payload to be carried. One excellent feature is the use of a strut running from the lower part of the fuselage to the wing where the engine is mounted. This helps to carry the weight of the engine when landing, especially on rough water, without the necessity of excessive wing structure and weight.

We sincerely hope that airplane manufacturers will soon be able to supply Mr.

(*Turn to page 81*)

PRESTO!

Every THOR "8" engine is equipped with the new Presto disc starter. Just a twist of the wrist and the Thor starts with a roar! For a description of the other precision features that make the mighty new THOR a winner, see our advertisement on page 69.

Tired of Crashes?

Why waste time and money building perfect models only to have them crash through lack of flight technique? Now you can learn the real secrets of contest winning performance explained in language you can understand. Don't go on "hoping" for the correct adjustment when

SECRETS OF

FLYING MODEL AIRCRAFT

will show you how to get 100% efficiency from your model. This handbook explains the step-by-step techniques for adjusting and flying fuselage and stick models • Indoor and outdoor hand launched gliders • Towline gliders • Flying scale. Send only 50c to

REGAL
MODEL AIRCRAFT COMPANY
Box 3117 Oklahoma City, Okla.

DEALERS!

Make More Money!

Pioneer Kits and Gliders at Special Sale Prices

Retail Price		Per Dozen
10c	2-in-1 Solids, assorted	$ .65
15c	Solids, assorted	.90
15c	Glider	.90
25c	Solids, assorted	1.60
35c	2-wing Catapult Gliders	2.25
50c	Solids (all parts cut out)	3.25

Order today! Limited quantity available

Send cash with order. Shipment by express collect. Write for large wholesale catalog.

Montauk Model Aircraft Co.
4320 Sixteenth Ave., Dept. P
Brooklyn 4, N. Y.

THE SUPERMARINE E 10/44

STUDY the latest British jet plane, the *Supermarine E 10/44*.
A 3-view and story with pictures will supplement the cover painting by Kotula in the February 1947 issue of MODEL AIRPLANE NEWS.

Thank You MR. DEALER!

Your recognition of Sky Hobby's policy of:

- Acknowledging all orders promptly
- Making immediate shipment from our central location
- Quoting maximum discounts—
- Prompts us to say Thank You!

Your acceptance of this policy has been responsible for our rapid growth. May we continue to serve you?

SKY HOBBY
INCORPORATED
806 GRAND AVE. KANSAS CITY 6, MO.
NOTHING SOLD AT RETAIL

BUY BY MAIL?

Look These Over

MOTORS		FREE FLIGHT	
Ohlsson "23"	$16.50	Buzzard Bombshell	$ 9.95
Bantom A	18.50	Comet Zipper A	1.95
Hornet	35.00	Comet Zipper	5.95
Delong 30	19.50	Pacer B	3.95
Fleetwind	24.95	Stinson Reliant	15.00
Arden .099	19.50	CONTROL	
Arden .199		Fireball	10.00
McCoy	35.00	Atomic	3.50
Rocket	22.50	Hellhammer	7.95
Super Champion	23.50	Formacraft P-39	3.75

Shipped Post Paid

Send for Our FREE Price List—Solids, Rubber, Gas and Supplies

B. F. JOYNER
"Everything for the Model Builder"
72 PARK LANE, MEMPHIS, TENN.

MODEL AIRPLANES BOATS - MOTORS - BALSA - SUPPLIES

MODELERS IN NEW ENGLAND

Send For Our Free List

EVERYTHING IN HOBBIES and SUPPLIES

THE AIRPLANE SHOP
25 High St. Pawtucket, R. I.

- QUICK DRYING
- FEATHERWEIGHT
- WATER WHITE
- STAIN PROOF

LEPAGE'S SPECIAL AEROPLANE GLUE

You can make a flock of planes with this water-white, transparent, light-as-a-feather glue. It won't stain any woods . . . sets *quickly!*

10¢

"Rite-Pitch"

The World's Finest Gas Model Propellers

ARE BACK . . .

AND YOU CAN GET THEM!!

8" & 9" .... 40c List
10" & 11" .... 50c List
12"-13" & 14" .... 60c List

Made in 6"-8"-10" & 12" Pitch for Controline or Free Flight.

JOBBERS contact us Immediately for "Rite-Pitch" . . . The World's Finest Gas Model Propellers.

Bob Roberts
110 W. 7th Ave.
Gary, Indiana

RITE-PITCH

BIG Assortment GUNS & BOMBS 25c

Postage 5c Extra

Special big assortment of 10 die-cast finely detailed BOMBS and GUNS

BLOCKBUSTER 8c
Postage 3c

PROPELLERS

ALUMINUM Adjustable Pitch

7½"	.25
8"	.30
10"	.35

ALUMINUM Tubing .010 Wall per foot

1/16"	.12
3/32"	.12
⅛"	.12

STANDARD TYPE Die Cast White Metal

2 Bladed			3 Bladed		
1½"	No. 13	.05	1½"	No. 25	.08
2"	No. 14	.07	2"	No. 26	.10
2½"	No. 15	.08	2½"	No. 27	.15
3¼"	No. 16	.10	4"	No. 28	.20
4"	No. 17	.12	4½"	No. 29	.25
4½"	No. 18	.15	5"	No. 30	.30

Spinner Type

3¼"	No. 1	.18	4"	No. 7	.25
4"	No. 2	.20	4½"	No. 8	.30
4½"	No. 3	.22	5"	No. 9	.35
5"	No. 4	.25	5⅞"	No. 10	.35
5⅝"	No. 5	.30			
6"	No. 6	.35			

ADD 3c EACH FOR MAILING

Boat and airplane fittings—parts also largest complete line of O-HO-OO gauge Railroad parts available anywhere.

Send for your catalog and assortment today! Catalog only 5c to cover mailing.

SELLEY MFG. CO., Dept. 301, 1377 GATES AVE., BROOKLYN 21, N. Y.

and Mrs. Wattson with their dream plane.

* *

One of the most unusual designs for a gas model airplane has been submitted by Kent Wanlass, see Fig. 2. It shows considerable ingenuity and though completely unorthodox it should be extremely efficient. It has one of the most important requirements for a hydro, plenty of planing surface. Most hydros fail to leave the water because the planing surface of the floats is too narrow. This has been clearly demonstrated lately at a number of hydro airplane contests and particularly at the 1946 Nationals. Though there is added complication in the use of a gull wing, as indicated in the front view, it eliminates the necessity of large fuselage structure, separate floats and struts.

The V bottom of the float is not necessary for models. In fact it makes the model not only more complicated but less stable when resting on the water. A completely flat bottom gives greater planing efficiency, is simplest to construct and provides least air drag. V bottoms are used on large airplanes to reduce the shock of landing. This factor does not enter into the problem of model hydros. If desired, the float part of the wing rearward of the step may be veed slightly to give streamline effect and the pointed trailing edge shown between the booms and the plan view.

Though the general idea is excellent, the location of the step relative to the center of gravity would make it impossible for the plane to leave the water. The float part of the wing should extend at least one-quarter of its length more forward than shown in the side view, and the step should be directly under the wing leading edge. This is considerably forward of the c.g. Unless it is this far forward at the c.g. the high thrust reacting against the drag of the water on the float will quickly nose over the model when it attempts to take off from the water surface.

If there is doubt about this, try it. Recently we saw this demonstrated, to the regret of many model builders. One builder was clever enough to move his float forward at a recent contest and in consequence placed well up among the winners. Before this was done his ship refused to take off.

A plane of this design should make an exceedingly stable contest "hydro." However, we suggest that instead of the pointed wing tips, elliptic tips be employed. The tips as shown do not give maximum efficiency.

Another excellent feature is the placement of the stabilizer leading edge slightly ahead of the vertical fins. This reduces blanketing effect. You will also note that the motor has a slight amount of upthrust. This is necessary where the drag of the airplane, whether in the air or on the water, is below the thrust line. Upthrust tends to reduce the nosing over effect.

The side view shows the float section of the wing at an angle negative to the thrust line. This will cause the nose of the float to dig into the water and trip the plane when taking off. The float section should be approximately parallel to the thrust line. Mr. Wanlass uses the term "upthrust." We can not help but ask: upthrust relative to what? From a design standpoint upthrust has no significance or meaning. What Mr. Wanlass evidently intends to convey is that the thrust line should be turned up relative to the wing chord more than on other airplanes. If we consider the thrust line shown in Fig.

2 as the horizontal reference line, the wing should be approximately parallel to it or at the most 1° positive. In this case the stabilizer should be negative to the thrust line 1½°.

Mr. Wanlass asks if the step on the airfoil will eliminate most of the lift of the centersection. The answer is absolutely no. The contour of the lower surface of an airfoil has only slight effect upon its lift. The upper airfoil surface is the chief controling factor.

Mr. Wanlass, on the whole, is to be complimented on this unique design.

* *

Many young designers are struggling with the problem of Canard pusher design, both in large craft and in models. Fig. 3 shows a design submitted by J. E. Toomer of Pasadena, Calif.

The first consideration in any airplane is proper flight balance and stability. Without these the craft cannot even fly poorly. Efficiency is important after these necessities are established. Mr. Toomer has performed his designing job quite well. He has placed at least part of the rudder or fin below the c.g., which is one of the important factors in a Canard. He tells us that he found this out the hard way, by cracking up a number of ships.

Another important factor which is not included in Fig. 3 is a front wing with considerable dihedral. Without dihedral or with only slight dihedral, free flight Canards have a tendency to nose in on a turn and to recover slowly, if at all. The front wing should have a dihedral of 15° to 20° on each side to create enough righting effect when banking. When turning, the fin area at the rear holds the rear of the plane from sliding sideways. The nose without a fin slides inward and down. If the plane is not rolled back to its normal position laterally before the nose slides sideways and forces the airplane toward the ground, a crash will inevitably result.

The problem here is to produce lateral recovery before direction displacement becomes large. This can be achieved most readily by dihedraling the small front wing as specified above. This also helps longitudinal stability because the air spills out from the dihedraled wing when the plane approaches a stalling position. This reduces the lift on the wing and allows the nose to drop gently and smoothly, resulting in immediate recovery.

This applies to both large planes and models. Though the plane shown here is drawn as a full scale airplane it may be constructed as a model. As a large airplane, the fuselage is too big and massive compared to the lifting surface. Unnecessary structural weight is involved. A more efficient airplane will result if the fuselage is reduced in length or the wings increased in size.

As drawn, this plane is apt to have a tendency to spin because of the excessive lateral area forward of c.g. compared to the lateral area, including the fins, rearward of the c.g. This is another important consideration in Canard design. Never put more area in front of the c.g. than there is behind it. A ratio of 3 to 4 or 2 to 3 is best.

The airplane shown would be much more efficient if the propellers were closer to the wing and the forward part of the fuselage shorter, with the elevator planes located on a line with the original position of the cockpit. The cockpit then should be moved rearward accordingly. This does not detract from stability or balance, yet reduces fuselage weight con-

(*Turn to page 85*)

See Page 13

siderably and increases the airplane's flight efficiency. A model will fly efficiently when constructed either according to the proportions shown in the drawing or according to the changes suggested.

Several commendable features specified for this plane by Mr. Toomer are:

1. Variable angle stabilizer to provide extra lift for the nose when the wing flaps are dropped so that balance will be retained.
2. Three position flaps to increase wing area (only two positions will serve our purpose here, one with flaps turned down at their leading edges to provide greater drag than lift, and one with them dropped in the conventional manner at the trailing edge to increase lift more than drag).
3. Rudder far back of c.g. to increase its effectiveness. Unquestionably Mr. Toomer has made the fuselage unnecessarily long to provide this long moment arm. It is not worth the price, however. It would be far superior to use a fixed fin on the fuselage and double drag-ailerons at the wingtips to produce rudder effect. In this case, opening up the split aileron creates more drag on one wingtip than the other and causes the plane to turn. With this arrangement the fuselage can be made shorter and lighter.

Don't forget to send the designs of your dream ships, both models and full scale, for discussion in this column. Special attention will be given to models in future issues.

Model Globe Swift

(*Continued from page* 23)

We have attempted to capture the eye appeal and flight characteristics of the real ship in our model; how well we have succeeded can only be judged by building and flying one yourself. Building the model is not difficult as standard construction practices are followed throughout; before starting, though, study the text and drawings to fix the details in mind. Work carefully as the reward for this is a better appearing, finer flying model.

CONSTRUCTION—The manner of fuselage construction calls for the use of four keels cut to shape from 1/16" sheet balsa. To obtain their shape trace the top, bottom and side outline shapes of the body. Bulkheads, likewise 1/16" sheet, are cut in accordance with the patterns given; two of each being required. Pin the top and bottom keels to the side view and cement half of the bulkheads to place. Attach a side keel and when dry remove the structure from the plan and add the remaining bulkheads and keel. Stringers are 1/16" sq. stock; attach the ones nearest the side keels first placing them on opposite sides in pairs to keep from pulling the structure out of line.

Between formers C and F where the wing fits in, curved pieces are cut from 3/32" sheet and they are shaped so as to make the fuselage sides fit to the curvature of the wing's uppersurface. Other items to be attached to the frame are the 1/32" balsa cockpit outlines as well as the very hard 1/16" balsa blocks in the rear which anchor the motor.

The nose block just forward of bulkhead A is made from pieces of 1/8" sheet cemented crossgrain. Cut out the center for the removable portion to fit into and cement the whole nose in place so it can be roughly cut to shape and then finished with sandpaper.

A hard balsa or soft white pine propeller block is needed for the flying

model. Drill the tiny hole for the prop shaft first, then cut the blank to size and shape shown. Cut away the back surface of the blank until the undercamber is as desired, then thin the front until the blades are of the desired thickness. Round the tips and reduce the depth of the hub a bit as shown. Blades are brought into balance by sanding. A free-wheeling gadget that will permit the big blades to spin freely in the glide is recommended for better flights. On our original model we used a second propeller, a scale one. It was made to the shape shown and we used a number of laminations of contrasting color wood to make it look realistic.

Tail surface construction is elementary and both stabilizer and rudder are made in a like manner. Cut the outline shapes from 1/16" sheet balsa and spars and ribs are 1/16" sq. stock. When the flat frames are dry, lift them from the plans over which they have been assembled and cement very soft 1/16" sq. strips to each side of each rib. These are later cut to the streamline rib shape shown. Be sure to notice that the stabilizer has dihedral; it is cracked in the middle and tips are raised to provide this.

Wings are easily assembled in two halves; the builder will, however, have to make a left wing drawing as there was insufficient room on the magazine pages for it. Ribs are cut from 1/32" sheet except No. 3 which is 1/16" thick; sand them carefully to exact size and cut the notches for the spars. Spars and leading edge are cut from sheet balsa and the trailing edge is a strip of 1/8" x 3/8" balsa tapered in crossection. With pins hold the various parts in place over the plans, and when they are finished fit the two halves together with 1-3/8" dihedral at each tip.

A sketch shows the landing gear detail. The strut is .040" diameter music wire bent as shown to attach to the wing structure. This type gear has been used on dozens of models by the author and none has ever failed nor has a wing ever been damaged because of the gear's ruggedness. Sew the strut to the wing and cement the area liberally. Scale effects of the gear are represented by slipping rubber tubing obtained from electrical wiring over the strut. Wheels may be purchased but they are made so easily from laminated balsa discs that it is hardly necessary. Remember to cement washers or bearing to the wheels so they will turn freely.

Covering is probably the most important item for a neat looking model but the underframes must be carefully built and sanded to prepare for this. Use colored tissue for lightness and work carefully using banana oil or thin dope to make the tissue stick. Use a separate piece of tissue for each side of each wing half and tail surface section. For the fuselage numerous small pieces of tissue neatly lapped are required to avoid unsightly wrinkles. Water spray the covering lightly to tighten it but do not apply any dope until the whole ship has been assembled.

Assembly of the components should follow this procedure: Slip the wing into place and cement it fast. Align the stabilizer with the wing and attach it, too. Now finish underside of the wing-to-fuselage opening as well as the stabilizer top with strips of 1/16" balsa and tissue. Fix the rudder perpendicular to the stabilizer, offsetting the leading edge about 1/32" for a right turn in the glide. One or two coats of light dope or banana oil may be applied to the covering to tighten it further and toughen it.

Now for the more minor finishing de-

tails. The cockpit enclosure is made from thin celluloid and cleaned photo film may be used for this purpose. Make paper patterns for each section of the windshield before cutting them from the celluloid. When cementing the sections fast, be careful to avoid cement smears. The structural details are represented by doping thin strips of dark tissue to the transparent surface. Incidentally, it should be noted for exact scale builders that the aft section and middle top portion of the cockpit enclosure are colored Plexiglas on the real plane to lessen the effects of the hot sun. Finish the undercarriage and tail wheel assembly by painting, etc. License numbers, radiator grill, wing walks and the like are effectively simulated by colored tissue skilfully used. Exhausts and other minor details are fashioned from scraps and help much to improve the appearance without increasing the weight appreciably.

Installation of the rubber motor makes the little *Swift* ready for a test hop. Since each model will vary in weight and efficiency, the proper amount of power must be determined for each; in all probability four strands of 1/8" flat brown rubber will be right for an average model but six strands may be required for a heavier one. Lubricate the rubber before placing it within the fuselage. The strands are hooked to the prop shaft and the other ends are dropped through the fuselage where they are held in the rear by the tiny bamboo pin.

Flight performance depends in a measure on how carefully the model has been built. On the other hand, though, no model regardless of how well constructed will give maximum performance without proper adjustment. With this in mind strive to get the most from your *Swift* in the way of flying satisfaction. First, roughly adjust the center of gravity by adding a small amount of weight within the nose or tail as may be needed to bring the ship into balance when held under the wing spar. Then make any further adjustments by gliding from shoulder height. If it stalls, add weight to the nose; if it dives, remove some of the weight or place a bit in the extreme tail.

First power flights should be made with just a few turns, and as performance improves and confidence is gained increase the power. Tilting the thrust line down will eliminate a tendency to stall while under power, while right or left thrust will control the power circles. As flights become satisfactory use a mechanical winder and stretch the strands of rubber out the nose before starting to build up maximum power. Most low wing scale models fly best when they are adjusted for a large left hand circle while under power and then once the motor is exhausted the turn should veer to a sweeping right one; this is typical of the *Swift*.

Incidentally, take care where you launch your *Swift* for Mrs. Murphy will surely resent your climbing over her roof to retrieve it and birds frown upon the practice of model planes nesting upon the branches with them. You have quite an investment of time and effort in your Globe so protect it with reasonable judgment.

PHOTO CREDITS

Page

2 *Above* British Combine
Below Press Assoc.

27 *Third from top* Charles Donald
All Others Robert C. Hare

29 *All* Chance Vought

World War I

(*Continued from page 27*)

half the wingspan in diameter. Controllability of the airplane was excellent in spite of the fact that with such a gigantic propeller attached to an ordinary rotary engine the torque and gyroscopic action would have been enough to make the D.III uncontrollable.

But it wasn't, and therein lies the story of the motor. The Siemens Halske SH.III engine was an 11 cylinder rotary air-cooled radial engine which ran at a normal operating speed of 1,800 rpm. Now, the ordinary rotary engine had a stationary crankshaft and the cylinders and crankcase, to which the propeller was attached, revolved. But in the SH.III engine, the cylinders revolved at a rate of 900 rpm in one direction while the crankshaft revolved at 900 rpm in the opposite direction through suitable gearing. This, of course, gave an equivalent engine speed of 1,800 rpm but with a propeller speed of 900, or a reduction from 2 to 1!

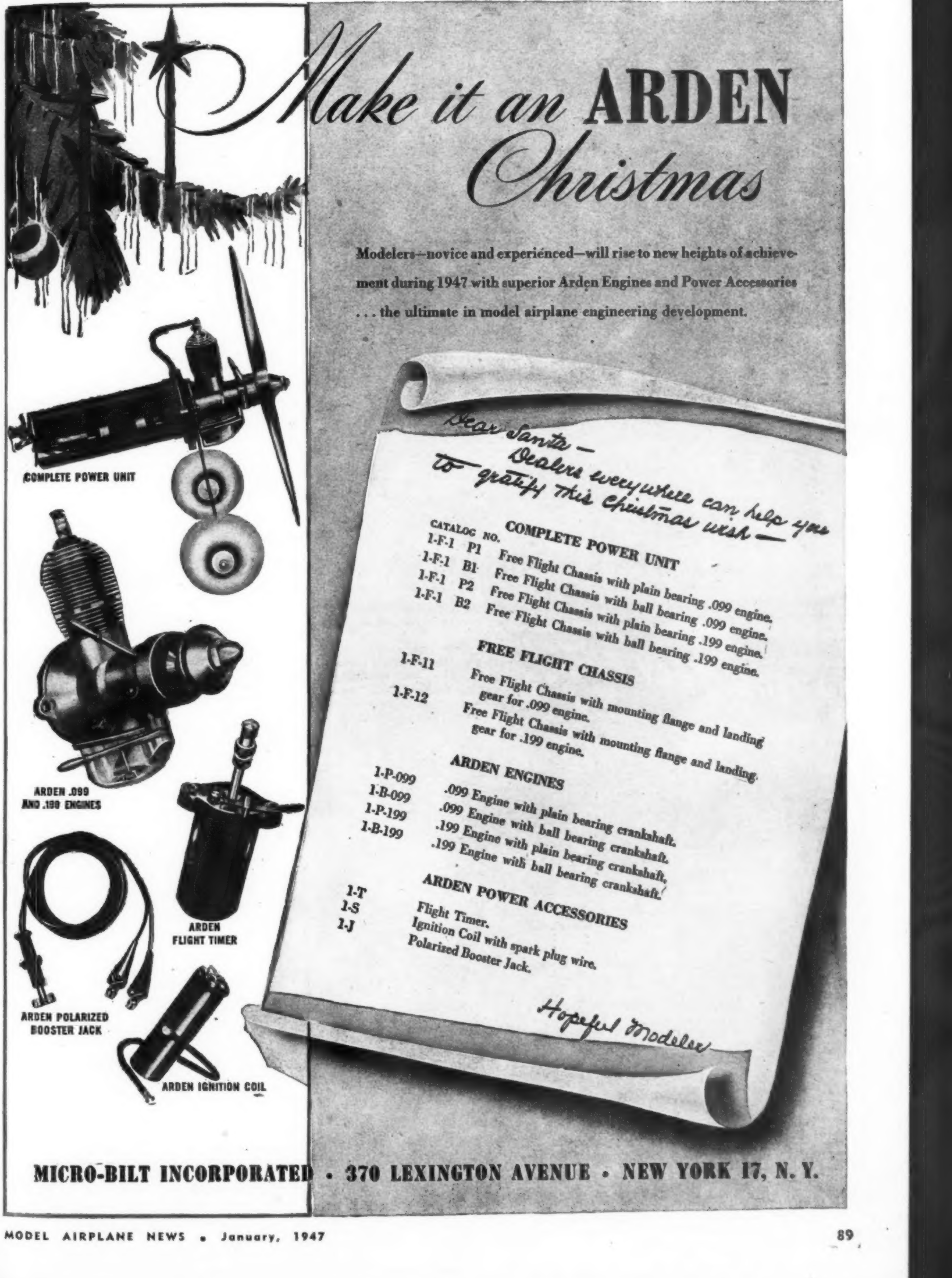
Obviously this made a lot more complicated engine, but then the Germans were going all out to win the war and their philosophy was "anything goes." At the same time the advantages of such an arrangement made the extra trouble very worthwhile. The low propeller speed thus obtained resulted in better efficiency and greater useful thrust. Centrifugal forces on the cylinders were less and the relatively high speed obtained by having cylinders and shaft revolving in opposite directions resulted in more power per pound of engine weight. And by far the greatest disadvantage found in all previous rotaries — gyroscopic action — was nearly eliminated by virtue of the two forces (propeller and motor) revolving in different directions.

Aside from that, the Siemens Halske SH. III could be throttled down to 350 rpm since both inlet and exhaust valves were mechanically operated. The French Gnome engine, for instance, had only an exhaust valve to each cylinder and was "throttled" by cutting the ignition from part of the cylinders so they wouldn't fire. The SH. III also was equipped with dual magnetos, with a third magneto for starting.

As to actual power output of the SH. III there is some question. It was made "oversize" in order to operate well at high altitudes and was consequently rated at 160 BHP at 12,140 ft. altitude. Normal BHP at sea level, according to German sources, was 200, with a maximum sea level takeoff power of 240 BHP.

That the Siemens Schuckert Flugzeugwerke G. m. b. H. (aircraft) and the Siemens Halske A. G. (motors) were capable of making something outstanding stems from the fact that the parent Siemens organization was long a major German supplier of precision machinery and electrical equipment for industry. Some time before the outbreak of W.W.I the Siemens interest set up the Schuckert branch to dabble in aviation and in the early stages of the war produced some very unusual giant size aircraft, none of which were made in any great quantities. In 1915-1916 they manufactured in limited numbers their first pursuit plane, called the SSW D.I, which was a dead-ringer for the French Nieuport 11. Except for narrower gap, the outlines of the D.I. matched the Nieuport almost to the fraction of an inch. There has been no explanation for this copying act except that perhaps the German air ministry thought

(*Turn to page 90*)



Make it an ARDEN Christmas
Modelers—novice and experienced—will rise to new heights of achievement during 1947 with superior Arden Engines and Power Accessories . . . the ultimate in model airplane engineering development.
Dear Santa—
Dealers everywhere can help you to gratify this Christmas wish—
COMPLETE POWER UNIT
CATALOG NO.
1-F-1 P1 Free Flight Chassis with plain bearing .099 engine.
1-F-1 B1 Free Flight Chassis with ball bearing .099 engine.
1-F-1 P2 Free Flight Chassis with plain bearing .199 engine.
1-F-1 B2 Free Flight Chassis with ball bearing .199 engine.
FREE FLIGHT CHASSIS
1-F-11 Free Flight Chassis with mounting flange and landing gear for .099 engine.
1-F-12 Free Flight Chassis with mounting flange and landing gear for .199 engine.
ARDEN ENGINES
1-P-099 .099 Engine with plain bearing crankshaft.
1-B-099 .099 Engine with ball bearing crankshaft.
1-P-199 .199 Engine with plain bearing crankshaft.
1-B-199 .199 Engine with ball bearing crankshaft.
ARDEN POWER ACCESSORIES
1-T Flight Timer.
1-S Ignition Coil with spark plug wire.
1-J Polarized Booster Jack.
Hopeful Modeler
COMPLETE POWER UNIT
ARDEN .099 AND .199 ENGINES
ARDEN FLIGHT TIMER
ARDEN POLARIZED BOOSTER JACK
ARDEN IGNITION COIL
MICRO-BILT INCORPORATED • 370 LEXINGTON AVENUE • NEW YORK 17, N. Y.

so highly of the Nieuport design that they wanted it developed and adapted to German needs and manufacturing methods.

This SSW D.I was powered by a Siemens Halske engine of 100 hp, identified as the SH. I. Next development along the pursuit line was the SSW D.II, powered by an SH. II engine, also a very Nieuportish appearing airplane. This aircraft is obscure in the records, and probably only a few were built. It appeared to have characteristics of both the Nieuport 17 and 24 combined with a few ideas that were of strictly German origin.

All of this led to the first crowning achievement in the Siemens Schuckert pursuit family, the D.III. From the photograph printed here—taken in the winter of 1917-1918 when the airplane was still fresh from the factory at Siemenstadt, near Berlin—there still is much evidence of Nieuport influence in the design. The "V" interplane struts, narrow chord lower wing, long chord rudder and general positioning of the wings all point to an unmistakable origin.

Structurally, however, the SSW D.III was much different from its French contemporaries. Fuselage was made of a former and longeron frame, covered with an outer skin of plywood. The fixed vertical and horizontal stabilizers were built integrally with the fuselage and faired into it through their plywood skins. Upper and lower curvatures of the fuselage forward of the cockpit were sheet aluminum covered as was the circular, open faced cowling surrounding the rotary engine. A short lower wing stub was faired into the fuselage and the tail skid was supported from a triangular fin on the bottom of the fuselage similar to the method used on the Albatros pursuits.

Circular in crossection its entire length, the fuselage was supported from the ground in front by a long legged landing gear which made the SSW D.III appear ready to jump. And the huge propeller was fitted with a rounded spinner attached to its hub.

Wings of the D.III, although modern by 1917 standards under which they were designed, showed signs of emerging from the old influence of many contemporary German types. The upper wing was made in one piece, supported from the fuselage by a right- and left-hand pair of outward spread strut units. It consisted of two main spars with a plywood covered leading edge, 36 full ribs and the necessary compression struts and internal wiring. The ailerons were framed of welded steel tubing with a sweptback trailing edge and a triangular aerodynamic balance. Ailerons were actuated by a torque tube in the upper wing, connected to bell cranks and push-pull rods in the center-section exactly as found in the Nieuport. The lower wing followed the same construction except that ailerons were not fitted. Interplane bracing consisted of pairs of single landing and flying wires in line with the wing spars.

Elevator and rudder of the SSW D.III were aerodynamically balanced, framed in steel tubing and fabric covered. The D.III was about average in size, but because of its long landing gear and short fuselage, appeared to be rather small. Upper wingspan was 27 ft. 6 in., with an overall length of 18 ft. 5 in. Wing area totaled 204.44 sq. ft. and the highest part of the airplane, not including propeller, was 8 ft. 4⅝ in. from the ground. Empty weight of the D.III was 1,155 lbs. which, combined with the useful load of 506 lbs. totaled a gross weight of 1,661 lbs. in flying condition. Wing loading was a little over 8 lbs. per sq. ft.

So much for the SSW D.III. It lost its place in the January, 1918, competition because of two counts: too much climb and not enough speed. All the elements for a happy combination of both were in the design, and it didn't take very long in those days to rebuild an airplane to whatever specification change might come along. So the Siemens engineers responsible for the D.III went back to their drawing boards and within a comparatively short time came up with drawings for a new airplane, the SSW D.IV.

About May, 1918—the month after von Richthofen's death started a run of losses among Germany's aces that threatened to totally undermine the morale of the flying services—the SSW D.IV made its first flight. While Siemens engineers were at the problem of getting more speed into the D.III basic design, they also made some substantial changes in the new plane that made it not only easier to produce but a much better all around fighter than the D.III had ever been.

Their problem was to produce an excellent defensive fighter plane. The days of Germany's offensive warfare were over. How this was accomplished and an analysis of one of the most frightening German pursuits of 1918, the SSW D.IV, will be discussed next month.

Ansaldo SVA-5

(Continued from page 39)

cement 3/32" by 3/16" strips of balsa to all landing gear struts; streamline these fairing strips and finish them with wood filler and colored dope. The axle is another length of 3/32" landing gear wire placed between the landing gear struts in the small U shaped slot shown on side view. The axle is held in place by several inches of 1/32" flat rubber. When wound tightly around axle and struts, the rubber is a highly effective shock absorber.

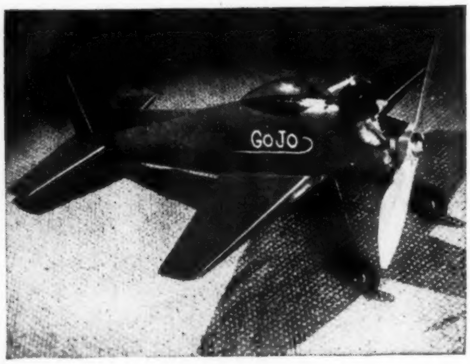
The addition of the tail skid which is also music wire will complete the fuselage and all attachments.

We are now ready to construct the wings which are built in the conventional manner. Here again we go off the beaten path seeking an accurate scale effect in that we utilize exactly the same number of ribs in our model as did the manufacturers of the prototype. Select medium weight balsa for all members. The top wing is made in one piece and without dihedral, while the bottom wing is made in two halves. The leading edge and the spar of the top wing should be of sufficient length to extend from tip to tip. Leading edges of both wings are 3/8" by 1/2"; trailing edges are 1/8" by 1/2" (additional sheet material being used to increase chord at aileron position on top wing only); spars are 1/4" by 3/8"; and tips are of 1/4" material. Ribs for both wings are identical, 14 being of 1/8" sheet while 58 are of 1/16" sheet. Root ribs for the lower wings are of 1/4" stock; all short ribs occasioned by the visibility cutouts are regular ribs cut to the proper length and sanded so as to conform with the 1/8" flat pieces used to form these cutouts. The wing air foil here used is a modification of the real plane's with an eye to strength, efficiency and ease of construction. Adjustable ailerons were tested on the model in the accompanying photographs; these however were found to be unnecessary, so they were cemented rigidly in neutral position.

When all wing construction is com-

(Turn to page 93)

NEW! GOJO



... Designed Specifically for Class A Engines—Atom to Ohlsson 23!

HERE it is—GOJO—newest in a long line of master designs by Walt Wilson—just what Class A Engine enthusiasts have been waiting for—and now just in time for Christmas. A gift that will really thrill every Class A fan. Designed along latest Navy fighter lines, GOJO is a beauty in looks, flight, and simplicity of construction. Kit is absolutely complete (except for engine). A real super value for only ------------------- **$2.95**

See the GOJO, and other popular Wilport models, at your dealer's today—and save 25c postage.

WILPORT MODELS 212 DARBY ROAD HAVERTOWN, PENNA.

Tell Dad . . . You Want a

WHIRLWIND *Christmas*

The Control Line Flying Thrill

Steer Him Over to Your Favorite Store for This Grand Kit

We couldn't think of a finer gift for any fellow than Monogram's Whirlwind. Big, 30-inch wing span. Parts so completely finished that building time is cut down and you can fly in a jiffy. Hinged cowling that opens to let you get at your engine. It's a thrill to build and fly.

Kit C-1
$7.95

At Your Dealer

Features fly-ability, speed, ruggedness, accessibility and the last word in sleek, beautiful lines. TOPS IN KITS—balsa body, completely finished — wing panels, completely finished — tail parts cut to shape — plastic canopy and spinner — landing gear bent to shape—fully formed wire parts—rubber tired wheels—all metal parts, hinges, screws, etc.—decals—two picture plans.

MONOGRAM MODELS MONOGRAM MODELS

MONOGRAM MODELS
2329 SOUTH MICHIGAN AVENUE, CHICAGO 16, ILLINOIS

YOU ARE GETTING **DOUBLE**

YOUR MONEY'S WORTH

WITH WASP-TWIN!

SPECIFICATIONS

Two-cylinder—displacement .60 cu. in.—two cycle, two port, rotary valve—bore .740 —stroke .702—bare engine weight 9½ oz.—rpm 10,000 plus; 20,000 with flywheel. (Pat. Applied for)

ONLY $35.00

For this price you can get not only the finest twin cylinder engine human hands can build—but also condenser and twin coil! **Plus full guarantee.**

The following statements are being verified daily by enthusiastic model builders in the U. S., in England, Hawaii, Canada, Mexico, Sweden, Brazil, Cuba, South Africa, Argentina —in fact throughout the world.

WASP TWIN PROVIDES:

Easier Starting Under All Conditions
Smoother Operation at All Speeds
Powerful, Trouble-Free Performance
Better Balance — Greater Stamina
Unsurpassed Efficiency and Dependability

COMPLETELY TESTED

More than nine years of development work on twin-cylinder design stand behind this superb engine. More than two years' time was devoted to painstaking testing of materials, processes, manufacturing methods, parts and actual production models **before the first Wasp-Twin was put on the market.** No greater care has ever been taken in the manufacture and examination of every part. The story of Wasp-Twin's superior engineering makes it the best value in the model engine world.

OUTSTANDING FEATURES

One-piece precision ground alloy steel crankshaft—High compression heads made by Intracast process for greater strength—Heads removable—Steel Cylinders, honed to mirror finish, have machine-turned integral cooling fins—Crankcase of aluminum alloy—Cylinders, pistons, and crankshaft hardened, then ground to utmost precision—Two crankshaft main bearings as well as thrust bearing provided—Connecting rods heat-treated—Positive click-ball timer and carburetor adjustment.

HOW TO ORDER

SEE YOUR MODEL DEALER OR HOBBY SHOP TODAY. IF YOU CANNOT BE SUPPLIED, ORDER DIRECT FOR LIMITED TIME. PLEASE SEND IN YOUR DEALER'S NAME AND ADDRESS. MOTORS SHIPPED POST PAID IN U.S. ON RECEIPT OF CASH, CHECK OR MONEY ORDER. C.O.D.'S OKAY. PRINT NAME AND ADDRESS.

All Orders Shipped Promptly.

MICRO MODEL CO.
Dept. M-1 Box 442
PASADENA 18, CALIF.

pleted, streamline leading and trailing edges, tips and cutouts; cement the solid blocks in place as shown (these act as interplane struts supports) and sand so as to conform to airfoil. A final sanding with fine sandpaper before covering with Silkspan will assure a neat job. Silkspan is recommended because it can be applied after being dampened with water. This aids further in obtaining the desired neatness. Two coats of clear dope and four of colored dope will complete the wings. It is wise to apply the regulation cocardes at this point. It is doubtful whether large cocardes can be obtained, so here is probably an unavoidable opportunity to display your skill by painting your own. This painstaking job is simplified by compassing circles of the needed sizes on thin cardboard; cut out same and with a soft pencil trace the largest or outside circle very lightly on the wing. Carefully apply one coat of clear dope as a base. Now three or four coats of colored dope will suffice. Note that the center is green and the outside red with white between. Don't neglect the insignia; they really dress up your model!

Now mount the lower wings. Take care to place them correctly and to allow for 3/8" dihedral and 2° incidence; this is very important.

While the lower wings are drying in place, make all the struts. The interplane struts are lettered A, B, and C; the cabane, or centersection struts are lettered D. Four of each are required and all are made of 1/8" by 5/16" hardwood. Streamline all struts, sand smoothly, and with the fingers rub in a goodly amount of cement. This both strengthens and serves as a base for the colored dope which is best applied after assembly. A very small notch cut in the fuselage at the proper points will better enable you to securely cement the cabane struts in place. Note, by checking the front view, that the latter form an inverted V.

With the lower wing and the cabane struts securely in place, we are now ready to mount the top wing. A better joint can be made at all strut attachment points by making a very small cut in strut support blocks. Small boxes strategically placed will serve to hold the top wing in position while drying. Take care that the wings are exactly in alignment; there is neither positive nor negative stagger; nor is there any incidence whatsoever in the top wing. When the top wing is securely dry, cement the interplane struts in position. Additional care is required here in order that the top plane is not caused to droop on either side. Matters will be made easier if you install struts C in place and allow them to dry before installing A and B. When all struts are securely in place (and don't be afraid to put an extra drop of cement here and there), they may be painted. Cream colored dope is suggested for the struts as this color will make a pleasant contrast.

Now, if you have not already done so, is the time to mount the motor. The control guide is firmly cemented in place between the outer interplane struts on the right side. The control leads were installed at the time the other intrior equipment was, so all that need be done now is to thread them through the guide.

Use the prop best suited to your motor. The author's job is powered with an *Elf* single and is equipped with a scale prop as shown on plans. This was possible because of the slightly higher thrust line. The motor mounts indicated are intended specifically for those who wish to enclose their motor more completely. However, if you use a larger motor, you will have

to adjust the thrust line accordingly. Several different thrust positions were tried with equal success.

One last detail to make and install is the wing radiator. This is carved from soft balsa, finished, and cemented in place. A machine gun may be added, if desired, to the right side of the fuselage top just forward of the cockpit.

Most modelers have their own pet way of providing access to the motor. This is left up to the individual. You can best solve this problem by considering your motor. The simple lines of the fuselage permits most any cowling arrangement. For display purposes, a vertical grill can be effected as suggested in the front view. Scale guy wires may be added if desired.

With the model completed you will be anxious to start logging time. This Ansaldo is a consistent and steady flier; it has no bad tricks; it takes off with a very short run, and if powered with a larger Class A or a small B engine it will cut capers to your heart's content.

With a little practice you'll find that it has a comfortable speed and the ability to stunt with the best. Here's to your good luck, and happy landings with this swell little 1″-1′ World War I flier!

Flash News

(*Continued from page* 2)

BAT in operation. The device is launched as far as 9 miles from the target and the "mother" plane returns to its base, never coming near enemy anti-aircraft fire from the target. The BAT "homes" directly into the target. It was the first fully automatic guided missile to see action. Your *Flash* reporter rode the *Privateer* tail turret during the tests and, although half-frozen, had a grandstand seat for the event.

CURTISS-WRIGHT, which recently announced its withdrawal from commercial aircraft activity, is now reported to be hard at work on a prop-jet-powered version of the C-46 *Commando*.

FOLLOWING completion of the record-breaking 11,237 mile flight of the Lockheed P2V *Neptune* "Truculent Turtle", the Navy announces signing of a contract for 98 of the type. The P2V-2 will have a variable camber horizontal stabilizer.

ARMY AIR FORCES, not to be outdone by the above, announced an additional order for an "undisclosed number" of Boeing B-50's, *Wasp Major*-powered big brother of the B-29 *Pacusan Dreamboat* following completion of the latter's 9500 mile flight from Honolulu to Cairo.

FIRST POSTWAR British jet job is the Supermarine E.10/44 fighter powered by a Rolls-Royce *Nene* turbojet unit. The machine is essentially the same in layout as Lockheed P-80 *Shooting Star* with the exception of the landing gear, which is of conventional tractor arrangement. A feature of the Supermarine is a new laminar flow airfoil which is expected to delay compressibility to a point permitting higher speed than the present record of 616 mph.

NORTH AMERICAN *Navion* has received its Approved Type Certificate from C.A.A. More than 300 have been completed and production is now at the rate of 6-a-day, and due to increase to 10-a-day shortly.

NAVY HAS placed an order with Glenn L. Martin Co. for 24 PBM-5A amphibians, largest in the world. The giant craft is a special PBM *Mariner* with retractable tricycle landing gear. Latest Martin plane reported is the XP4M-1, a landplane

powered by two reciprocating engines and two jet engines.

IT MAY NOW BE revealed that the Aircraft Gas Turbine Division of De Laval Steam Turbine Co., Trenton, N.J. is at work on a large experimental aircraft engine. This military contract, one of the largest in existence, has been held in great secrecy.

GRUMMAN's latest and largest effort to date is the *Mallard*, 8-10 place amphibian big-brother to the *Widgeon* and the *Goose*. It has a span of 66 ft. 8 in. and is 48 ft. 4 in. long. It is powered by two Pratt & Whitney *Wasp* "H" series engines of 600 hp. each, which give it a top speed of 215 mph and a cruising speed of 180 mph. It weighs 12,500 lbs. and features a variety of internal arrangements. It is tagged at $115,000.

FIRST PRACTICAL tests of sweptback propeller blades in actual flight is now under way at Caldwell, N.J. The propeller, a three-blade design with gently curved blades like a scimitar, has been developed by Curtiss Propeller Division of Curtiss-Wright Corp. The sweptback design is expected to push the effective range of reciprocating engine-propeller aircraft well into the transonic zone, possibly as high as 700 mph. The propeller has been developed under contract with AAF.

A NEW AMERICAN distance record for gliders was established by Dick Johnson, PAA pilot, of San Francisco, when he covered a distance of 314 miles. The glider was a two place Schweizer SGS 2-8, similar to a TG-2.

BOEING AIRCRAFT is preparing a radically new liaison plane at its Wichita, Kans. plant. It has been designed for use by ground forces to replace the familiar *Grasshopper* types.

THE NEW AERONICA *Chum*, two place spinproof lightplane, will soon be in production. The design has been licensed by Fred Weick, creator of the *Ercoupe*. It differs from the *Ercoupe* only in a redesigned single tail, modified canopy with additional transparent panels and slight changes in the landing gear. Production is scheduled to begin early next year.

LATEST AND one of the best looking lightplanes is the Weatherly-Campbell four place all-metal monoplane, designed to sell for $5,000. The company is located in Dallas, Tex. and plans quantity production of the craft, which cruises at 140 mph and has a 750 mile range. It was designed by the famous Don Luscombe, who sold the drawings to Raymond Weatherly and William Campbell, partners in the new firm.

NAVY RELEASED details on the Fairchild XNQ-1 two place primary trainer. The design features a large bubble canopy, controllable pitch propeller, a top speed of 170 mph and equipment formerly installed only in advanced training planes.

NAVY RELEASED photographs and data on Curtiss XBT2C-1, a single seat bomber-torpedo monoplane of which ten are to be delivered. The craft was designed to the same general specification as the Douglas AD-1 and Martin AM-1 (change of the BT2C designation to AC-1 has not yet been announced) and is generally similar to them in appearance. Chief differences in the XBT2C-1 are provisions for a second crew member in a special jump-seat within the fuselage and a cooling fan forward of the engine to improve cooling during rapid climbs and at high altitudes. The craft is powered by a Wright F-3350 engine.

Berkeley OPENS ANOTHER NEW CHAPTER IN MODEL HISTORY

with new AUTOTROL

*"AUTOTROL" and "CONTROLINER" are registered trademarks of BERKELEY MODELS, INC. All kits are manufactured under Bill Effinger's patents and patents pending.

"CONTROLINERS"

Since 1933, BERKELEY has pioneered many new developments in model aviation. Now, BERKELEY, first in gas models, — first in radio control, — presents AUTOTROL, amazing single line controlled gas models. Models that are interesting to construct and are easy to handle in the air. Every flight is a deft, precise and exciting performance. Buy, try, AUTOTROL — and judge for yourself.

SAFETY . . . "AUTOTROL" lines have only a few pounds tension at all times. Damage due to line breakage is negligible. SPEED — AUTOTROL gives you a speedy, thrilling performance every flight. Automatically compensates for wind and gusts. Reacts faster than the human brain. Model can be trimmed for maximum speed and be constantly held in that attitude. Simulates real automatic pilot control.

North American P-51 MUSTANG "CONTROLINER"

For Precision Flying — 37" Wingspan — with Three-line Autotrol for .19 to .30 Displacement Engines

The first and last word in controlled gas models. Here you have the model for precision flying . . . you operate trim tabs, landing gear, throttle and flaps while in flight. Features . . . automatic elevator operation—automatic rudder operation—trim control—throttle control—automatic landing gear and tail wheel operation—ram supercharged engine—laminar flow wing without interference from control lines—plastic bubble canopy with completely detailed cockpit—aluminum spinner to fit all makes of engines—inflatable air wheels—automatic flap operation—formed wire landing gear—planked balsa fuselage—sheer pin motor mount.

Complete Kit (Less engine, propeller and colored dopes) **$7.95**

The BUG FOR SPEED CONTROLINER

17½" Wingspan with 1 line Autotrol for .099 to .19 engines

Flashes through the air like a lightning bug. Easy to build and fun to fly. Get the BUG for gas model flying pleasure. Features: Pre-formed all balsa laminar flow type wing—formed landing gear—streamlined rubber wheels.

Complete Kit (Less engine, propeller and colored dopes) **$2.95**

The BAT CONTROLINER FOR SPEED

32" Wingspan with 1 or 2 line Autotrol for .49 to .65 engines

For upright or inverted engine installation. A smooth flying job that really gives a fast performance in the air. Pilot the speediest job in the show. Buy . . . Build . . . Fly . . . the BAT!

Features: Laminar flow type wing without interference from control lines — simple plywood and balsa fuselage construction — sheer pin motor mount — aluminum spinner—fits all make engines — formed landing gear — streamlined solid rubber wheels — elevator trim control. (Less engine, propeller and colored dopes) Complete Kit **$4.95**

AT BETTER DEALERS EVERYWHERE

BERKELEY MODELS INC.
140 GREENPOINT AVE. • BROOKLYN 22, N. Y.

JET
cluc
stee
cen

L
th
c
th
lc
th
m
m
fc
a
in

0

Here They Are!

COMET'S *Big* "5"

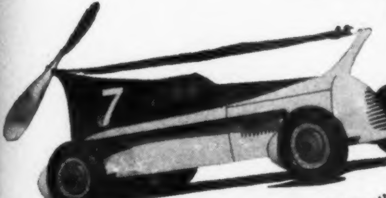
OF THE SEASON

5 BIG THRILLS FOR AMERICA'S MODEL BUILDERS!

... they're swell for Christmas gifts!

HI-POWER RACER $1^{00}

KIT Z1



JET or RUBBER propelled . . . Over-all length 11". Kit includes prop, metal hardware, plastic wheels, plastic steering wheel, shaped radiator block, decals, dope and cement. *A beautifully designed job!*

FLICKER

KIT T9

$3^{95}

Control Model suitable for class II, III and IV (Class "A", "B" and small "C"). Sturdy construction which resists shock . . . easy to build. A HONEY FOR VALUE! *"It's quicker . . . it's slicker . . . it's Flicker!"*

Leave it to Comet to come through with models that appeal to your imagination — models that give you the utmost in building and flying thrills! No wonder millions of model builders look to Comet for that something new, something different and something better that makes model building worthwhile! Here are 5 great models that are worthy products of Comet's famed engineering leadership — easily constructed, outstanding in performance, and tops in value. See them at your Comet dealer!

SKYCYCLE

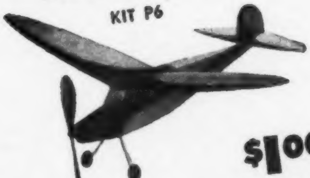
KIT Q1

$3^{95}

The most exact and complete "build-up" scale model ever produced. *A Comet triumph!* 30" wingspan.

CLIPPER JR.

KIT P6



$1^{00}

Sport type rubber-powered model easily adapted for class "A" gas model. Graceful lines. An excellent performer. 36" wingspan.

SPARKY

KIT W1

75¢

A record breaker in latest National meet for the Junior Cabin Rubber Event. *Its amazing performance adds new thrills!* 32" wingspan.

COMET MODEL AIRPLANE & SUPPLY CO., Inc.

129 West 29th St., • Chicago 16, Illinois.
1186 Broadway, • New York City 1, New York.

DEALERS! FILL IN AND MAIL THIS COUPON TODAY.

Please put my name on your mailing list for information on new models, dealers' helps, etc.

NAME ________________

ADDRESS ________________

CITY ________ STATE ________